THE PATHFINDER OF THE SEAS

The Life of Matthew Fontaine Maury

JOHN W. WAYLAND

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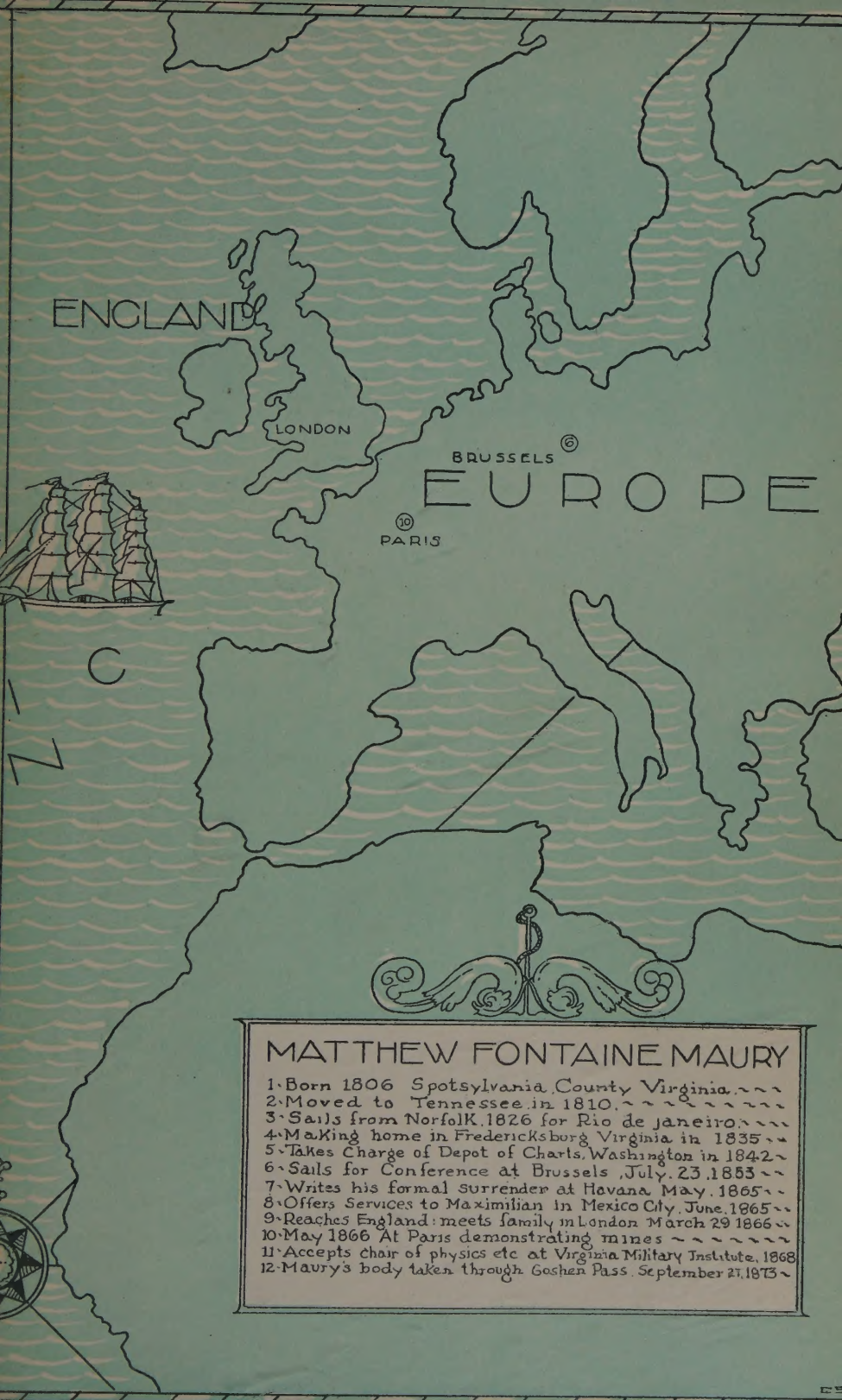
ENGLAND
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PARIS
MATTHEW FONTAINE MAURY
1. Born 1806 Spotsylvania County Virginia.
2. Moved to Tennessee in 1810.
3. Sails from Norfolk 1826 for Rio de Janeiro.
4. Making home in Fredericksburg Virginia in 1835.
5. Takes Charge of Depot of Charts, Washington in 1842.
6. Sails for Conference at Brussels, July. 23. 1853.
7. Writes his formal surrender at Havana May. 1865.
8. Offers Services to Maximilian in Mexico City. June. 1865.
9. Reaches England: meets family in London March 29 1866.
10. May 1866 At Paris demonstrating mines.
11. Accepts chair of physics etc at Virginia Military Institute. 1868
12. Maury's body taken through Goshen Pass. September 27. 1873.

THE PATHFINDER OF THE SEAS

MATTHEW FONTAINE MAURY, LL.D.

Wearing the Doctor's Gown of the University of Cambridge, England. The degree was conferred by the Vice Chancellor in 1868 as a recognition of the benefits to commerce and navigation from the use of Maury's Wind and Current Charts.

THE PATHFINDER OF THE SEAS

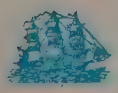
The Life of Matthew Fontaine Maury

By

JOHN W. WAYLAND

With an Introduction by

WILLIAM J. SHOWALTER



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PREFACE

THIS Life of Maury is given to the world in the belief that it will meet a real need in public and private libraries. Maury was a national and international benefactor.

The author gratefully acknowledges his debt to earlier writers, nevertheless this book contains many facts relating to Maury, his family, and his work that have not hitherto been published. Special acknowledgments are made to the following:

To Judge W. S. Gooch, Charlottesville, Virginia, whose encouragement led to the undertaking; to Mr. Vivian M. Fleming, Fredericksburg, Virginia, who gave valuable aid in locating the house in which Maury was married; to Dr. H. R. McIlwaine, State Librarian, Richmond, Virginia, whose kindness enhanced the Library's treasures; to Miss Nellie T. Gibbs, Librarian; Col. Henry C. Ford, Professor of History, and Mr. William Couper, Business Executive, Virginia Military Institute, for numerous favors; to Honorable P. E. Cox, Keeper of Archives, and State Archaeologist, Nashville, Tennessee, for valuable assistance; to Mrs. Littleton T. Fitzgerald, Jr., Richmond, Virginia, and other descendants of Maury, for cordial interest and co-operation; and to Dr. William J. Showalter, for his generous Introduction.

Harrisonburg, Virginia,
April 1, 1930.

JOHN W. WAYLAND.

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INTRODUCTION

THE career of Commodore Matthew Fontaine Maury represents a great challenge to any biographer. Commerce and science alike are his deep debtors. No one who sails the seven seas, who uses imports or in the smallest degree is affected by exports fails to reap benefits from the work of his life. And no one who is touched in any way by weather information fails to have his life enriched in a greater or lesser degree by the work of the great geographer of the seas and the father of meteorology.

The other day I was reading Sir James Jeans' *The Universe Around Us.* Discussing the indestructibility of energy he remarks that even the fall of a baby's doll from its carriage shakes every star in the heavens.

And I thought as I read it how the deeds of a good man like Maury a trillion times more powerfully influences the lives of every human being, however unconscious of that influence men and women may be, and however remote from centers of civilization their lots may be cast.

As no man constitutes a greater challenge to a biographer than Maury, because of the map-changing, race-affecting influences of his work, and because the world needs a better appreciation of his researches and their consequences, so, too, no man has been more fortunate in

his biographer than this great pioneer in oceanography and meteorology in having Dr. Wayland assume that role.

Back in the middle nineties Dr. Wayland and I were college mates. From his very youth he was ever the intense and careful student, never content to arrive at a conclusion until he had all the facts in the premises.

Throughout the years that have followed he has developed this first and outstanding qualification of a great historian until he has become one of the ablest fact finders of our generation as well as one of our most dependable appraisers of the contributions of great men to our civilization.

He neither allows himself to be carried away with enthusiasm for his subject, as many biographers are prone to do, nor permits himself to present the deeds of men or events in their lives out of the perspective of their times, as has latterly become so fashionable with a certain type of biographer.

Rather, he approaches his subject "with the cold, calm neutrality of the upright judge" and brings the true philosophy of history to his work.

His life of Commodore Maury measures up to the best canons of historical research and interpretation and is a rich addition to our American historical writings.

As one examines the chapters of *The Pathfinder of the Seas* he finds a fine collection of unusual illustrations portraying places identified with the life of the great oceanographer, and is impressed by the wealth of data about the Maurys in Tennessee and elsewhere that has never hitherto found its way into the historical record. The

author's outline and description of "Scraps from the Lucky Bag" is highly timely, as these have been mentioned by every writer on Maury, but presented by none in specific terms heretofore.

One needs only refer to the chapter headings in the table of contents to realize the exhaustive nature of the biography, or to the chronology to understand how deeply Dr. Wayland has gone into his subject.

And coupled with it all, yes permeating it all, is the free, easy, and readable style that seems to reincarnate Commodore Maury and to bring us into his living presence to share his joys, to feel his sorrows, to thrill at his triumphs.

WILLIAM J. SHOWALTER.

Washington City,
April 17, 1930.

THE PATHFINDER OF THE SEAS

CHAPTER I

IN OLD SPOTSYLVANIA

MATTHEW FONTAINE MAURY had a historic name and he was born in a historic region. The locality became much more historic after his birth, but even before it was distinguished in more ways than one.

Spotsylvania County, Virginia, lies between two rivers, the North Anna and the Rapid Anna. The North Anna is on the south; the Rapid Anna borders the county for about six miles on the north, then joins with the Rappahannock for the remaining distance of twenty miles in separating Spotsylvania from Stafford. Within the county of Spotsylvania four small rivers rise: the Mat, the Ta, the Po, and the Ni. Near the southeast border of the county they all join together and form a large river, the Mattaponi.

These river names, the four small ones making the one long name, look as if somebody long ago was playing with words. It may be so. They are probably Indian names and, as we know, the Indians were very clever name makers. Two little tribes of Mattaponi Indians still live on the Mattaponi River.

The Rapid Anna derived the first part of its name from its swift current, and the second part in all probability from Queen Anne of England; but the English people

also play with words—they have a habit of making them shorter whenever they can—and the early Virginians did the same thing; so the Rapid Anna, or Rapid Anne, soon became the Rapidan, as it is today.

When this county was laid off and named, in 1720, the governor of Virginia was a gallant gentleman, Alexander Spotswood. Some years earlier a colony had been named Pennsylvania because it was Penn's forest. Spotsylvania was no doubt named and thought of as Spotswood's forest; for he was very much interested in this region, as will appear. And the name was fitting, for it was a great woodland. In 1864, a terrible battle that was fought there was called the Battle of the Wilderness; and even today one may travel there for miles through a dense growth of trees and bushes, from one town or one farm to another.

Spotsylvania is also a land of gold and iron. Gold mines were opened a hundred years ago and have been worked at different periods; and even in the days of Governor Spotswood iron was mined, smelted, hauled to the rivers with ox teams and shipped away in boats. The governor himself was so much interested in such enterprises and did so much to promote them that he has been called, ever since, the Tubal Cain of Virginia. In 1732, the very year in which George Washington was born, William Byrd, of Westover, visited Colonel Spotswood in Spotsylvania for the special purpose of learning about the iron business. At that time Spotswood had a tract of 45,000 acres and was mining iron at several places on it.

Mr. Byrd wrote a most interesting story of this visit,

calling it "A Progress to the Mines." He speaks of the Rapidan, the horseshoe bend of the river at Germanna, iron shoes for the oxen, Colonel Willis's new town of Fredericksburg, the best kinds of wood for making charcoal, and relates a tragic story of how Lady Spotswood's pet deer saw his image in a mirror and smashed the glass.

It is not fanciful to think of the gold and iron of Spotsylvania as typical of Matthew Fontaine Maury's character and work. He was both brilliant and useful. He was a man of strength and worth. His birthplace is twelve miles west of Fredericksburg, in the land of gold and iron. A little station on the railroad is called Furnace. A few miles farther west is New Hope, "Gold Dale" postoffice. Here in the wilderness Maury was born, January 14, 1806. Four years later the family moved to Tennessee. Thence Maury went out into the great world; but we cannot forget his humble birthplace in old Spotsylvania. In the same place he married. At Fredericksburg was his wife's home, and in that quaint old town their oldest children were born. There he wrote, or at least had published, his first book, a notable treatise on navigation.

Maury traveled and sojourned in many lands; he was familiar with all of the "seven seas"; he was honored by the wise and great, far and near. He was invited to dwell in France, in England, in Russia, in Mexico; but in his heart, when he thought of home, he probably thought first of Spotsylvania and Fredericksburg.

Other famous men have doubtless felt the same way about this region. George Washington grew up on a

farm that lies on the hills just across the river from Fredericksburg. This river is the Rappahannock. It was here, say some, that he threw a silver dollar across the river. If he did not do that, he probably threw a stone across more than once when he was a boy, though it is a long throw. In later life Washington's mother lived in Fredericksburg. There she died, and there stands the tall, white monument that marks her grave. It was at Fredericksburg, beyond a question, that young Washington planned to board the boat that was to take him to the sea and into the life of a sailor, a plan which he gave up in deference to his mother's wishes.

John Paul Jones, the first famous sea fighter of the United States, spent some of his early years in Fredericksburg. So did Hugh Mercer, a brigadier-general of the Revolution, killed at Princeton; honored in the old Virginia town with an imposing monument. George Weedon, another general of the Revolution, lived in Fredericksburg, and there James Monroe, later President, began the practice of law. All these, Washington, Jones, Mercer, Weedon, and Monroe, preceded Maury to the hills of fame; others from the same neighborhood followed him. One, whose birthplace and early fields of service had been in places distant, ended his brilliant career not far from Maury's birthplace in the fields of gold and iron. At dusk, on May 2, 1863, Stonewall Jackson, having led his "foot cavalry" through the Spotsylvania woodlands in his last great maneuver, fell mortally wounded by the roadside, near Chancellorsville, only a short distance from the homestead where the Maurys lived in 1806.

The parents of Matthew Fontaine Maury were Richard Maury and his wife, Diana Minor, married in 1790. Matthew was the fourth son in a family of five sons and four daughters. He was named after his father's grandfathers. The Maurys and the Fontaines were both French families. The Minors were of Dutch stock, the first of the name in Virginia having been a sea captain.

John Fontaine, an early member of the Fontaine family in Virginia, was with Governor Spotswood in 1716 on the famous expedition across the Blue Ridge, memorialized in the Knights of the Golden Horseshoe. Fontaine kept a daily journal, and so became the chief historian of the expedition. And it is a noteworthy fact that Spotswood and his party, including John Fontaine, in 1716 went over or very near the spot where Matthew Fontaine Maury was born in 1806.

The house in which the Maurys lived and in which Matthew was born is no longer standing. Another old house, for many years a Herndon home (now deserted), in which Maury was married, and in which tradition has it George Washington went to school, stands a silent guardian of past years on a nearby hill.

Mr. Vivian Minor Fleming, of Fredericksburg, a near relative of the Maurys, and for many years a careful student of local history, guided the author in a pilgrimage to Matthew Fontaine Maury's birthplace and to the old Herndon home. In olden days, says Mr. Fleming, Maury was pronounced "Murry."

CHAPTER II

PIONEERS OF TENNESSEE

THE five years following Maury's birth were notable in our history. The very year in which he was born, young Zebulon Pike discovered Pike's Peak, and Lewis and Clark came back from their expedition across the Rockies, exploring the vast Louisiana territory just purchased from France. A year later Robert Fulton ran his steamboat on the Hudson, and five years later Nicholas Roosevelt launched his at Pittsburgh and took it clear down to New Orleans, first by the Ohio River, then by the Mississippi.

War was raging in Europe. Napoleon was trying to strangle Great Britain with a paper blockade. England was striking back. Our ships and seamen were being caught in the double net, and Jefferson's famous Embargo, a desperate measure to avoid war, was being approved by some of our people and hotly condemned by others. John Marshall, new Chief Justice of the Federal supreme court, was laying broad and deep foundations for national strength and judicial supremacy.

Before Maury was five years old Robert E. Lee, Edgar Allan Poe, Abraham Lincoln, Jefferson Davis, William E. Gladstone, and Alfred Tennyson were born. Nobody except their fond mothers paid much attention to those

babies just then, but everybody heard of them in due time. Already a famous man had said, "Go West, young man!" Other people were saying it too, though it did not seem necessary, for people—young and old—were going anyway. The covered wagon was moving slowly but surely into history. Down through the long valleys between the Appalachian Mountains, across the rugged passes, and mile after mile out upon the broadening plains those restless arks of empire ceaselessly advanced. The distance across the front was long, from north to south; the front rank was not straight or regular—it zigzagged fitfully, fatefully. Broken wheels, hasty graves, shattered hopes marked the lines of toilsome movement everywhere, but the lines kept moving; and as the years passed new commonwealths rose out of the wilderness. Louisiana, Indiana, Mississippi, Illinois, Alabama, and Missouri sent their messengers back upon the long wagon trails, asking for statehood. Even before Maury's birth Kentucky, Tennessee, and Ohio had risen out of the West to join the stark new sisterhood of hope and promise.

One day shortly before Matthew Maury was five years old, his father hitched up the horses to the wagon and headed them southwest. The voices of the frontier were calling. The family was moving. The Maurys were joining the long lines of westward progress. Tennessee, the far distant regions of middle Tennessee, beckoned in their dreams.

Little Matthew, no doubt, was elated with excitement. There were enough members in the family to have all sorts of feelings. Catherine and Charles were doubtless

too young to take much interest in what was going on. John Minor, Mary, Walker, Matilda, Betsy, and Richard Launcelot, all older than Matthew, were probably smiling or hesitating, as they looked forward or backward. The mother of all these children almost certainly shed a few tears, when the youngsters were not looking, but most of the time her face was bravely forward. The father, a rather stern man, perhaps had little to say, but everybody paid respectful attention when he did speak. If little Matthew felt crowded in the wagon and then got tired walking, Matilda was ready to carry him.

They crossed the head waters of the Ni and the Po and left the Spotsylvania wilderness behind them. But many a new wilderness was ahead. The road they followed led down east of the Blue Ridge, probably past Charlottesville and Lynchburg, to the wide gap in the mountains where the city of Roanoke now stands. There they perhaps bore west and fell into that well-worn old trail that led down from the Shenandoah Valley through Salem, Christiansburg, Radford, Wytheville, Abingdon, and Bristol, known in these days as the Lee Highway, then a muddy road in rainy weather and a rather rough one at all times.

In 1810 pack horses were probably still numerous, though carts and wagons were displacing them. Perhaps a stagecoach, drawn by four swift horses, came clattering by now and then. It is likely enough that the Maurys may have met some of the early Baltimore bell teams, hauling produce and store goods between Baltimore and Knoxville, the horses decorated with jingling bells. As

the pioneers went on down by Bristol into eastern Tennessee, past Knoxville and on towards Nashville, they almost certainly saw a good many of the Cherokees and other Indians whose tribal homes were in those regions.

Finally, after two or three weeks, the creaking wagon stood still. The tired horses drew a long breath and began to jerk their heads down towards some bunches of grass; and somebody said, "Here is our new home." Probably all of the Maurys were glad that the long journey was done, but it is doubtful whether little Matthew was very tired. He had ridden parts of the way; walked now and then; but much of the distance he had been carried on the back of strong Sister Matilda.

The new home of the Maurys was about six miles west of the town of Franklin, in Williamson County, Tennessee, and about eighteen miles southwest of Nashville. Boyd's Mill was in the vicinity. The Harpeth River, a tributary of the Cumberland, flows near by, on the northeast. Nashville at that time was a considerable town, but Franklin was as yet only a crossroads village. Much of the country was in forest; farms were new and log cabins were not very close together. The region was then a part of the great American frontier. The Maurys were pioneers.

From the records of Spotsylvania County we learn that the Maurys sold their land there on September 22, 1810, to Nathaniel Gordon for $300. The deed was signed by Richard Maury and Diana his wife in the presence of Edward Herndon, John M. Herndon, and Armistead Gordon.

Most of the houses on the Harpeth, like those in other frontier settlements, were built of logs. Life was simple, conveniences were few, but there was plenty to eat—poultry, beef, mutton, and ham cured in the old Virginia fashion. To go with the various kinds of meat there were batter cakes, of corn, wheat, and buckwheat, and plenty of biscuits.

As time went on and Matthew grew taller—not very tall—he worked in the cotton fields, hunted raccoons, bears, and other animals with the other white boys of the neighborhood and with the Negroes. Now and then he attended an "old field" school. When the white people began to settle in this country they found here and there a piece of good land that was clear of trees. Such a place had probably been used by the Indians for growing corn, potatoes, or tobacco. It was an old field, and so the settlers termed it. Frequently a little schoolhouse was erected at one side of such a field, and in time nearly every little schoolhouse out in the country was called an "old field" school.

Matthew Maury received good training at home. The children were accustomed to be silent and listen when their parents spoke. As Mrs. Corbin, Maury's daughter, wrote many years later, "The day of obedient parents had not then dawned." Maury's father was strict, religiously and otherwise. As Matthew himself stated in later years, he was taught to respect women, to love the truth, and to remember God.

When Matthew was about twelve years old he met with an accident that was almost fatal. Probably he was out

hunting. Maybe he was helping to clear off a "new ground" and one tree lodged against another in falling, and had to be dislodged. At any rate, he was up in a tree—high up, forty-five feet—and fell. It is a wonder that he was not killed. At the time those who were with him thought that he was dead. After a while he revived, but he was badly hurt. In falling, or as he struck the ground, his tongue was caught between his teeth and almost bitten off. His back was so severely injured that his father thought he could never swing an axe or work on the farm again.

In planning to make the best of a bad situation it was decided to send Matthew to school some more. Since it appeared that he could not do hard work with his hands, he was to be given a chance to see what he could do with his head. Accordingly he was sent to Harpeth Academy. He was anxious to go, but his father was not enthusiastic. He was probably sorry to lose a good hand on the farm. The oldest boy of the family, John Minor, had already entered the navy, and it may be that one or two others of the sons and daughters had either left home or were talking about it.

At Harpeth Academy young Maury was fortunate in his teachers. Rev. Mr. Blackburn, afterwards chaplain to Congress, taught him Latin, in which he made rapid progress. James Otey, who became the first Anglican bishop of Tennessee, and William C. Hasbrouck, later a distinguished lawyer, taught him various things in books and out of them, and gave him some fine ambitions. After a while young Maury was called upon by

one of his teachers, then another, to hear this, that, or the other class. In this way he became an assistant teacher. This gave him useful experience, and he was proud of the confidence thus shown, but at the same time he felt that it interfered with his progress in his own studies.

But one of the keenest spurs to his ambitions came from another and a more humble source. In the neighborhood was an old shoemaker by the name of Neal, who lived near the Maurys and repaired their shoes. As it turned out, he also repaired the fortunes of the family. The Maurys often noticed when their shoes came home from Neal's, shod with new half-soles, that the bottoms were literally covered with some kind of figuring. The characters were mostly x's and y's. Anybody as inquisitive as young Matthew was certain to investigate. He found that old Mr. Neal had a mania for mathematics, and that the figuring on the shoe soles were algebraic solutions of mathematical problems. The old cobbler's zeal in this branch of study struck fire in the soul of young Matthew. He developed an ambition to become a skilled mathematician.

The boy had a good many dreams and a few rather definite plans. Later he wrote of himself at this time as follows:

"When I became old enough to reflect, it was the aim at which all my energies were directed to make myself a useful man. I soon found that occupation, for some useful end or another, was the true secret of happiness. With this idea, I left school, where I had received a very desultory sort of education. I was anxious to enter the Military

Academy at West Point. But the bare mention of the wish put my father in a rage. . . ."

His father was a good man, but he evidently thought that his son's best chances for worth and usefulness lay in other fields.

Recently the author has learned some very interesting facts about the Maurys in Tennessee. These items are not contained in any life of Maury hitherto published, and they are of so much significance that they are inserted at this point.

As already noted, Richard Maury and his family, in 1810 or 1811, on going to Tennessee, settled in Williamson County. Three years earlier, in 1807, a part of Williamson County had been erected into a new county and named "Maury." It was named in honor of Major Abram P. Maury, a brother to Richard Maury. This at once suggests ample reasons why Richard Maury located in this particular part of the new State. His brother was there, and already was one of the outstanding citizens.

The old homestead and the farm where Richard Maury and his family lived and where Matthew F. Maury grew up is now owned and occupied by Mr. W. F. Owen, a descendant of the Maurys. His grandmother was first the wife of Richard L. Maury, Matthew's favorite brother, for whom he named his eldest son, Richard L. Maury.

As shown by a tombstone on the old homestead, Richard L. Maury, older brother of Matthew, died in 1838 at the early age of 34. From other sources it has been ascertained that his widow, Peggy A. (1812-1898), married, second, Harrison Boxley. Mr. Boxley and his wife reared

their grandson, Mr. W. F. Owen, who now lives on the historic farm. Mr. Owen states that his grandmother, Peggy A. Maury, bought the farm of 200 acres at a court sale in Franklin, the county seat of Williamson County.

Other tombstones on the same farm mark the graves of Charles M. Maury, brother, and Catherine Ann Maury, sister, to Matthew F. and Richard L. Maury (1804-1838).

Part of the old house in which the Maurys lived when Matthew was growing up still remains. Sheds have been added on either side, and the whole structure is now used as a farm outbuilding; but the foundation of the massive brick chimney remains and is plainly shown in the picture on another page.

Distinguished lawyers well known at Franklin and at Columbia (county seat of Maury County) in the early days were Felix Grundy, A. P. Maury, Thomas Washington, and Sam Houston. The battle of Franklin, by many considered the bloodiest of the Civil War, was fought near the Maury homestead on November 30, 1864.

CHAPTER III

FIVE HUNDRED MILES ON HORSEBACK

A CERTAIN Sunday morning in the spring of 1825 was notable in middle Tennessee. The sun may have been shining, the birds singing, and the waters of the Harpeth rippling merrily, but there was promise of a gloomy day at the Maurys. Matthew, aged nineteen, was riding away on horseback, a troubled look on his face. He was going on a long journey, but his father was so unwilling for him to go and was so much hurt by his headstrong determination that he had turned away at the last moment without bidding him good-bye.

Young Matthew was starting out on the trail of one of his dreams. He had often thought of going to West Point, New York, to enter the United States Military Academy, but certain conditions diverted him from that idea. His father's opposition was respected in that matter, although his advice was not followed in the alternative. At that time there was no United States Naval Academy, but young Maury had received an appointment as midshipman in the navy. That meant that he was to take up training on board a ship. The fact that his oldest brother, John Minor Maury, had become a midshipman at the age of thirteen and had experienced thrilling adventures on many seas, no doubt heightened the

spirit of adventure in young Matthew. He gave up the plan of entering the army, but set his purpose firmly towards the navy. His appointment had been secured for him by Honorable Sam Houston, then a member of Congress from Tennessee.

One reason, no doubt, why Maury's father was so much hurt was the fact that his son had obtained this appointment to the navy without consulting his parents or letting them know anything about it in advance. But even though he strongly disapproved of his son's conduct, and did not hesitate to say so, he permitted him to follow his own choice; and so the young man rode away, headed northeast towards Washington and the harbors of big ships. His long, horseback journey was in many respects paralleled twenty years afterwards by that of young Thomas Jackson, later the famous "Stonewall," when he traveled from western Virginia to the Military Academy at West Point.

But Jackson was probably ahead of Maury in one thing —he owned a horse. Maury had to borrow one. More exactly, he bought one on credit. He promised that he would sell the horse at Washington or near there and send the money back to the former owner in Tennessee. Of course, he took a risk. Nobody could guarantee that he could sell the horse or that he could get what he paid for her—seventy-five dollars. Moreover, a long hard trip of five hundred miles might kill the horse.

But perhaps young Maury reasoned that no great project can succeed without some risk. More probably he did not reason at all, but launched out upon the enthusiasm

MAURY'S BOYHOOD HOME IN TENNESSEE

This photograph shows the chimney and central part of the old home.

TENNESSEE STATE CAPITOL, NASHVILLE

In this building, in the dome of the Library, Maury's portrait was painted in fresco in 1857.

MAURY FAMILY CEMETERY NEAR FRANKLIN, TENNESSEE

and fair hopes that are a part of the resources with which Nature often endows young people who are handicapped by poverty.

Now he had a horse, but how about money to pay his expenses along the way? Here his generous services in the Harpeth Academy stood him in good stead. His teacher, Mr. Hasbrouck, paid him thirty dollars, just in the nick of need. Here is Maury's own account of this eventful crisis in his life:

"In the meantime my appointment to the navy came. I went home, and the first intelligence my parents had of my intentions was this letter of appointment. It disturbed the family very much, and my father expressed his disapprobation of my conduct in strong terms. As I had proceeded without consulting him, he determined to leave me to my own resources. I was resolute: I bought a horse, and got the man to trust me until I could remit him the money after selling the horse in Virginia. I set out from home without a cent in my pocket, intending to trust to luck, and, if necessary, stop on the road and work out my bills when I got to town. However (Sunday morning) I found that the faithful Dominie had left thirty dollars for me. . . ."

The second or third day on his journey young Maury fell into company with two merchants, Mr. Read and Mr. Echols, from Alabama. They were also traveling horseback, and were on their way to Baltimore to purchase goods for their stores. With them he rode as far as Fincastle, the county seat of Botetourt County, Virginia.

At Fincastle Mr. Read and Mr. Echols probably con-

tinued on directly northeast, towards Lexington and Staunton, and so on down the Shenandoah Valley, which was (and is) the main highway between North and South. But young Maury apparently turned eastward from Fincastle and crossed the Blue Ridge. Probably he followed the James River, passing through the mountains at Balcony Falls and coming out on the east side of the Ridge in Amherst County, between Lynchburg and Lovingston. If so, it was not long until he found himself in the main wagon road east of the Blue Ridge that the Maurys had followed (in the opposite direction) in 1810, going to Tennessee. At any rate he came on up into Albemarle County, where he stopped at the home of his cousin, Reuben Maury, near Charlottesville. He had fifty cents in his pocket.

At Cousin Reuben's he had an experience which must have been very embarrassing to him at the time, but made such a good story that every one who writes of this period of Maury's life finds an excuse for telling it. The young midshipman was the guest of honor, so at dinner the Negro servant waited on him first. Maury had never seen ice cream. When he received a saucerful, with a spoon, he gravely took a spoonful and passed it on. No doubt he came to a time in after years when he could laugh heartily at his blunder, but it must have been very painful to him then.

When Maury reached Spotsylvania County, his birthplace and the home of his early childhood, he had only twenty-five cents left. If Cousin Reuben or someone else in Albemarle did not make him a small loan, he traveled

on this part of his journey for less than half a cent a mile, for the distance from Charlottesville to Fredericksburg is about seventy miles. Altogether, he was on the road from his starting point in Tennessee to his old home in Virginia more than two weeks. Fanny, his faithful saddle mare, must have stood the long ride well, for in Spotsylvania County she was sold for seventy-five dollars and the money was sent to her former owner in Tennessee.

Good friends and good fortune seemed to be smiling.

At the home of his uncle,* Edward Herndon, in Spotsylvania, his young cousin, Ann Herndon, gave the young midshipman a smile that seemed best of all. He carried it with him around the world for nine years and then came back to his wedding day. Ann was the daughter of Dabney Herndon, a business man of means in Fredericksburg. Her blue eyes, auburn hair, and musical voice proved fatal to Maury at first sight. Just what happened to her on that occasion is not so definitely recorded, but she afterwards admitted that she received a very favorable impression of her young kinsman at their first meeting and asserted that he, with his ruddy complexion, made her think of the description that is given in the Bible of the young shepherd David.

At Washington good luck befell young Maury again. The Secretary of the Navy allowed him fifteen cents a mile on his journey from Tennessee to the National Capital. This put into his hands a tidy sum that exceeded any he had possessed before, and was ample for his immediate needs.

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*Edward Herndon was an *uncle by marriage*. The suggestion here is that Maury married his *first* cousin: she was in fact a very distant cousin.

CHAPTER IV

ACROSS THE ATLANTIC

ON AUGUST 13, 1825, young Midshipman Maury at New York boarded the ship on which he was to receive his first training for naval service. It was a new ship; it had an interesting name; and soon it took on board a man whom all our States were pleased to honor—General Lafayette, whose generous service to America in the Revolution was remembered with gratitude, and who during the year 1824-25 had paid his last visit to our country.

Now he was going back to France. This new ship, a United States frigate, had been chosen to carry him across the Atlantic. It had been named the *Brandywine,* commemorating the first battle of the Revolution in which Lafayette had taken part. And the naval authorities, in selecting officers for the *Brandywine,* had chosen them from as many different States as possible, in compliment to Lafayette.

On September 8th the *Brandywine* spread her sails at the mouth of the broad Potomac, where the distinguished guest had come aboard. Down Chesapeake Bay she pointed her bows, heading for the ocean gate between Cape Charles and Cape Henry. Spanning the bay, arching over the ship's path, appeared a brilliant rainbow. It

was hailed as a good omen. It seemed a gracious tribute of Nature to the good will of nations and an inspiring promise of a splendid future to all on board.

It was not long, however, until bad weather, leaks in the ship, and seasickness caused many on board to forget the rainbow, or to remember it only with bitterness. General Lafayette himself was so ill that he could not often take his meals with the ship's officers, neither could he talk with them as much about his long and eventful life as they had hoped for.

In spite of all the disappointments, however, it was a great thing to cross the Atlantic with Lafayette. Not many young apprentices in sea craft could have such an experience. As a testimonial of their esteem the midshipmen of the *Brandywine* presented to the general a beautiful silver urn, engraved with scenes that would remind him of his late visit to the nation he had helped so much in his youth and its youth. And when he stepped ashore at Havre he carried with him the flag of the *Brandywine* as a souvenir of the voyage.

From Havre the *Brandywine* sailed northwest across the English Channel to Cowes, where repairs were made. Thence she went out into the Atlantic again, and far south to Gibraltar, where, in the figurative language of the ancient mariners, the Pillars of Hercules hedge the narrow gate into the Mediterranean. At Gibraltar the *Brandywine* joined the United States squadron commanded by Commodore John Rodgers. This was very early in November. Here the ship remained during the winter, being

refitted. In the spring she returned home, reaching New York in May, 1826.

Such a voyage, especially under such conditions, would have meant a great deal in the life of any young man. To Maury it had unusual values because of his ambitions and scholarly habits. He was required to study navigation. His shrewdness was shown in the fact that he procured a textbook printed in Spanish in order that he might learn a new language along with the main subject of study. As he climbed up and down the steep stairways of the ship, he had in mind a word or a sentence that he was trying to master. And the ambition he had conceived in the backwoods of Tennessee, to be a master mathematician, was not forgotten. It was strengthened no doubt by an incident or two of this voyage. For example, it is said that a knotty problem was passed from one man to another, around the ship, unsolved, until he solved it.

His device for getting true diagrams and illustrative figures in spherical trigonometry was ingenious. He drew curves and circles on the cannon balls and placed them in positions so that he could see them as he walked the deck. It is no wonder that he soon established a reputation among his shipmates for studious habits and scholarly ability.

As the shores of one strange land after another took shape above the waves, young Maury's eyes were open to the wonders of the world. The white chalk cliffs of England, the bold headlands of France, the vine-clad hills of Portugal, the olive groves of Spain, and the boundless shores of Africa must have brought to him new knowl-

edge and new dreams. He circled the tempestuous Bay of Biscay. He may have seen the headlands of Cape Finisterre, and possibly coasted near enough to admire the white walls of beautiful Lisbon. He crossed the paths of Columbus, Magellan, and Drake. In the English Channel he may have recalled the splendid fight the British sea dogs of the sixteenth century had made there against the Spanish Armada, and at Trafalgar he probably thought of Nelson's last great battle and his famous call to his men to do their duty. At Gibraltar his ship rode on the ancient track of the Phoenicians and the Romans, and also on the one more recently made by the warships of his own country, going in to rebuke the insolence of the Barbary pirates. Castles in Spain, islands in the sea, ships and flags from distant lands were dreams no longer —they were thrilling realities.

The nine months of that first voyage across the Atlantic and back were rich and promising in the expanding life of young Maury. His education was going forward rapidly; his visions were lifting continually to wider fields.

CHAPTER V

AROUND THE WORLD

FROM May on the Harpeth to May in New York a year had passed. Young Maury was twenty. He made a brief visit to the old home on the Tennessee frontier, and no doubt had many interesting stories to tell of Lafayette and a midshipman's experiences on the *Brandywine*. We may be pretty certain that he called on the friend who had trusted him with the gray mare, to inquire whether the money for her had been received. Probably his journey this year followed in part the same trail that he had used the year before, in company with Mr. Read and Mr. Echols. But coming back from Tennessee, instead of continuing as far north as Charlottesville, he perhaps went through Lynchburg and Richmond, and so on southeast. At any rate, by June 10, 1826, he was at Norfolk, Virginia, walking up the gang plank of the *Macedonian*.

The *Macedonian* was a United States frigate, and on her young Maury had been ordered to temporary duty. No doubt his adventurous heart leaped with exultation when he learned that she was bound for Rio de Janeiro, that city with the glorious harbor, on the southeast coast of Brazil.

For sixty-two days the *Macedonian* spread her sails in

summer seas, first north then south of the equator, and then pushed her way into Rio. We may be sure that the keen eyes of Maury soon located the lofty dome of the Sugar Loaf and the sharp horn of Corcovado. In those days the hand of art had not yet vied with Nature in the Bay of Botafogo, but the natural wonder and beauty there were enough to chain the delighted gaze of every beholder.

After a month or two on the coasts of Brazil the *Macedonian* sailed southwestward thirteen hundred miles to the broad mouth of the River Plate (Rio de la Plata), and there anchored at Montevideo. Distances are long on the coasts of South America; and a voyage from the River of January (Rio de Janeiro) to the River of Silver (Rio de la Plata) was another protracted adventure into wonderland.

The River Plate is made up of the Parana and the Uruguay, and is almost as broad as long. From Maldonado on the north, in Uruguay, to Cape San Antonio on the south, in Argentina, the distance across the mouth of the Plate is 143 miles. Two hundred miles inland measure its length to the confluence of the Uruguay and the Parana. Montevideo, the City of Roses, lies on the north shore of the Plate, about sixty miles back from Maldonado.

In 1826 war was raging in Uruguay. The wave of revolution that had swept around the world, beginning with our thirteen English colonies and in France, was now reaching a point of subsidence in the independence of the Portuguese and Spanish colonies of South America and Mexico. Miranda and Bolivar in the north, San Martin

and O'Higgins in the south, with many other leaders of revolt, had won applause in many lands and had received a bold guarantee of liberty in the famous proclamation of President Monroe, the "Monroe Doctrine." The stirring events that were taking place in this rich field of history supplied the reasons why the *Macedonian* and other United States ships of war at this time paid Montevideo a visit. There young Maury must have been in his element. Beautiful scenery, great events, and stirring problems fascinated him.

After a while the *Macedonian,* going southward fifteen hundred miles farther, rounded Cape Horn or sailed through the tortuous strait in the Land of Fire, and came out into the Pacific Ocean. Thence she sailed northward thirty-five hundred miles to Callao Roads, Peru, the port of the city of Lima. In passing thus from the Atlantic to the Pacific, Maury was on the track of Magellan and Drake, those bold mariners of the sixteenth century, whose sea paths led around the globe.

On March 10, 1827, in Callao Roads, Maury was transferred from the *Macedonian* to the *Vincennes.* The latter was another United States warship which had more recently come into the South Seas. Because of the unsettled conditions in that part of South America our warships kept cruising up and down the coasts of Chile, Peru, and Ecuador to protect our merchant ships.

For the next two years this patrol continued, and thereby Maury was afforded an excellent opportunity to become acquainted with this part of the world. In his letters home he described some of the fighting he saw at Guaya-

quil and set forth in graphic touches the looks and habits of the people thereabouts. The endless chain of the Andes, with their fifty and more volcanic peaks, became familiar to his eye. The descriptions that he afterwards wrote of these regions for his geographies have the sure skill of the eyewitness. Here is an example:

"If you stand in the public square of the city of Quito, you can see eleven snow-capped volcanoes all at once. One of these, Chimborazo, is so lofty that it can be seen by moonlight at a distance of ninety miles. Cotopaxi, a near neighbor of Chimborazo, is the grandest of all the volcanoes. Its terrific eruptions sound like the discharge of the largest cannons, and have been heard at a distance of 100 miles."

In July, 1829, the *Vincennes* left Callao and faced westward across the Pacific Ocean. The first stop was at the Marquesas Islands, about four thousand miles out from Callao. These islands were then called the Washington Islands, having been given that name in 1791 by Ingraham, an American navigator, who visited them in that year. They were taken over in 1842 by the French, who changed the name. Captain Finch, of the *Vincennes,* was ordered to stop at the Marquesas Islands to see to it that the natives gave proper treatment to any of our seamen who might be compelled, in the lawful pursuit of business, to enter the Marquesan harbors for supplies. There were other commendable reasons why he was to go there. A special effort was to be made to influence the natives helpfully by setting them an example of good conduct.

These islands had a special interest for Maury. On one

of them his brother John had spent two years, cut off from civilization. His exile there came about in this wise: Shortly before the outbreak of the War of 1812, John Maury had secured a furlough from the United States navy and had gone as first officer on a merchant ship to China. He and six men were left on Nukahiva, one of the Marquesas Islands, to collect sandalwood and other articles of commerce. They, with their goods, were to be taken off by their ship returning from China, but the war began and their ship was blockaded in a Chinese port by a British warship.

In the meantime, on Nukahiva a war broke out between two native tribes, and all of the Americans were killed except John Maury and another man named Baker. Fortunately for them the famous *Essex,* commanded by David Porter, came by Nukahiva and took them off.

Luckily, Matthew Maury in 1829 found an old chief who had been his brother's friend, and from him he learned much that interested him. He was able to talk to the old chief in his own language, having learned it by hard study in the two or three weeks the *Vincennes* lay there. The chief was so much pleased with the young brother of his former friend that he gave him a royal welcome and offered him a royal throne; but Maury, with becoming courtesy, declined the flattering honors and sailed away on the *Vincennes.*

Narrowly escaping a wreck, due to a sudden swell following a calm, the good ship left these hospitable islands and in five days reached Tahiti, one of the Society Islands, whose queen, paying them a visit on shipboard, was badly

frightened by the cannons that were fired in her honor.

After a month at Tahiti, the *Vincennes* sailed north some twenty-five hundred miles to the Sandwich Islands, now known as the Hawaiian Islands. On Hawaii, the largest of the group, Maury saw the famous Cascade of the Rainbow. Probably he also visited the great volcano of Kilauea. Captain Finch then went on northwest to Honolulu, the chief city of these islands, where he adjusted certain matters of importance on behalf of the United States government.

Honolulu is almost on the parallel of twenty-one degrees north latitude. The *Vincennes* sailing thence westward on across the broad Pacific touched the mainland of Asia on nearly the same latitude at Macao, south China. The great cities of Canton and Hongkow are near Macao; and to reach Macao the *Vincennes* passed in between the northern Philippines and Formosa. She was the second United States warship to visit China, the *Congress* having preceded her in 1819.

It was January 3, 1830, when the *Vincennes* cast anchor in Macao Roads. After receiving messages from the American consul at Canton, seventy miles north, and from various merchants in that city, Captain Finch headed his ship towards the southeast and visited Manila, the chief city of the Philippines. Probably no one on board dreamed at that time of what importance the Philippines would come to assume in the history of the United States.

Leaving Manila after a short stay there, the *Vincennes* turned her prow towards home. But "home" was far away. Many miles, many days were yet to be counted

before the "land of the free and the home of the brave" gladdened the eyes of those ocean wayfarers. But the six months of homeward voyage were broken at many places by beauty and wonder. A stop was made in the Straits of Sunda, that narrow pass between Java and Sumatra. This southward course from Manila was taken, no doubt, to cut off a big corner of the Indian Ocean; for the *Vincennes* was aiming at the Cape of Good Hope, the southern point of Africa.

After many leagues of tropic seas the famous Cape was rounded. They were then on the memorable sea trails of Vasco da Gama and Bartholomew Diaz, who sought India by going south and east while Columbus sought it by going west. A brief stop was made at Cape Town, which is in the same latitude as Montevideo, and then the *Vincennes* turned northwest towards the island of St. Helena, arriving at that place of storied exile early in May. There, just nine years before, Napoleon Bonaparte had died, after six years of residence as a prisoner of war. His body had not yet been taken back to France.

The officers of the *Vincennes* were allowed to visit Napoleon's tomb; also Longwood House, in which he had lived. Born on an island, he escaped from Elba to which he was first exiled; but St. Helena completed the fatal trinity in his island destiny.

From St. Helena straight northwest through the Atlantic Ocean to New York is about six thousand miles. On June 8, 1830, the *Vincennes* reached New York. The time lacked just two days of being exactly four years since Maury had boarded the *Macedonian* at Norfolk. On the

two ships he had circumnavigated the globe. Many young men of his day spent four years going around a college; he spent four years going around the world. For him those years had to take the place of a college education, but Maury was a good student and made the most of his oppportunities, wherever he was. Before very long he was able to write books that college students were glad to read. As he traveled he read such books as he could buy or borrow. During a part of the time on this long voyage he had the privilege of using the books of Midshipman William Irving, a nephew of the famous Washington Irving.

But with all of the varied advantages for education that Maury and his associates enjoyed in cruising in many waters and touching on many lands, he for one realized keenly the limitations of shipboard schools, when they alone had to be depended on by the young officers of the navy. His experiences and observations soon convinced him that the United States should have an academy for training men in the naval service, similar to the one at West Point for men of the army.

CHAPTER VI

AROUND CAPE HORN AGAIN

FOR a full year, June, 1830, to June, 1831, Maury was on shore, mainly in New York and Washington; then he sailed again for the south Pacific, this time in the sloop of war *Falmouth*.

The name of this ship had a singular fitness, the result probably of pure accident. Across the Rappahannock from Fredericksburg, and slightly higher up, is the old town of Falmouth. In colonial days it was a mart of importance. At the head of tidewater on the Rappahannock, it was a place of trade for large areas of the piedmont country and even distant sections of the Shenandoah Valley. The assertion is made by some that the first millionaire in the United States made his fortune at Falmouth. This must be as it may be—the writer cannot vouch for it; neither does he know how Falmouth got its name. It may have been named for the famous seaport in Cornwall, England. It may have found its name in the conditions of its own geographical environment. It is at the mouth of a small stream that enters the Rappahannock at the falls. Falmouth is a name appropriate to the location.

And how the sloop of war *Falmouth* got its name has not been ascertained. There may have been no causal re-

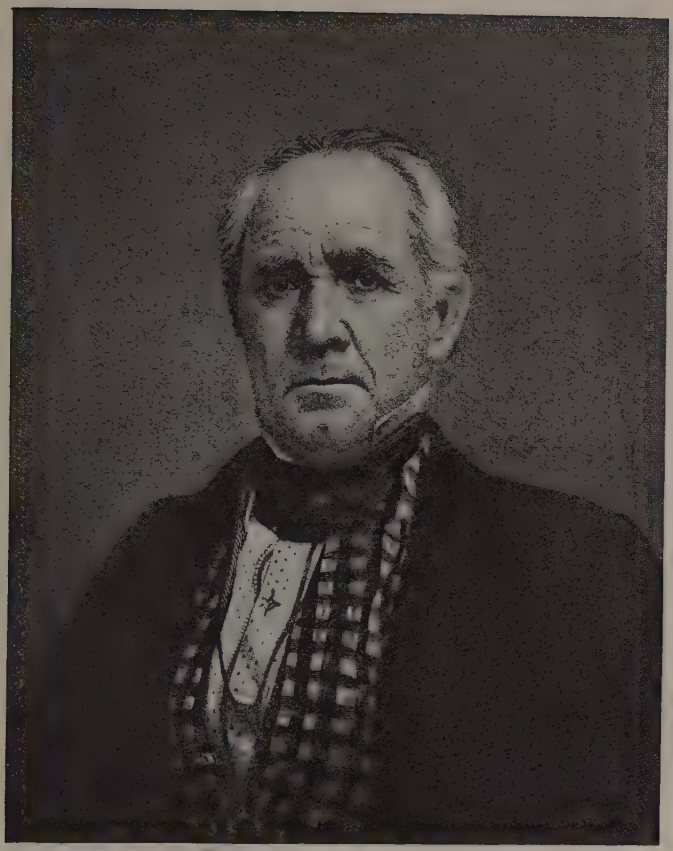
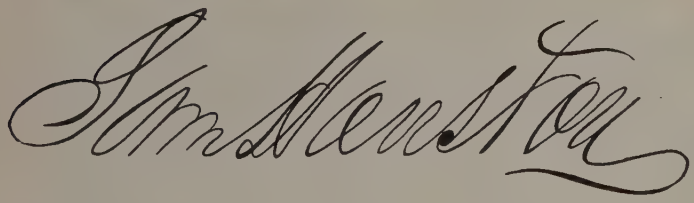


Photo Courtesy J. T. White



Maury was appointed to the U. S. Navy from Tennessee by General Sam Houston at the time Houston was a Congressman from that State.

OLD HERNDON HOUSE IN SPOTSYLVANIA COUNTY, VIRGINIA

Ann Herndon and Matthew Fontaine Maury were married in the first floor room at the right.

lation whatever between this ship's name and the little town on the Rappahannock; and yet it was peculiarly fitting that Matthew Fontaine Maury, whose ancestors and other kinspeople had been so long associated with Fredericksburg and Falmouth, and who himself shortly thereafter called the same locality home, should now sail on the *Falmouth.*

During his year on land Maury had been busy. In New York and Washington he had continued his studies, getting ready to take the examination for the rank of passed midshipman. This examination covered the following subjects and books: Bowditch's *Navigation;* Playfair's *Euclid,* five books; McClure's *Spherics;* a modern language (Spanish or French); mental and moral philosophy; Bourdon's *Algebra;* and seamanship.

Maury took his examination as one of a class of forty, and passed with a rank somewhat below the average—his number in the scale being 27. This apparent mediocrity yields readily to explanation. The highest grades were probably made by those men who answered mainly in terms of the books, sometimes perhaps without understanding very well what it was all about. Maury's mind had original habits. He was by nature a trail-blazer. He could not so well follow other men in speech or thought—he thought and spoke for himself. These qualities no doubt put him at a disadvantage in all such tests. The real tests of his powers were to come later, in other ways.

It is barely possible that another factor may have entered into Maury's ranking in this examination. He was scoring high on other subjects. His interests were divided.

His attention was not all the time concentrated on Euclid and Bowditch and Bourdon during that fateful winter. While he was in Washington, Ann Herndon was in Georgetown. It required more than the Rappahannock and the Potomac to separate them. Maury, now twenty-four, had been around the world. He had seen English beauties. He had not been indifferent to the eyes and smiles of Brazilian and Peruvian maidens. But Ann Herndon could not be forgotten. He came back to her. And as he sailed away on the *Falmouth* he carried a promise and she kept a seal. On this little seal, which she used only when she wrote to him, was the Biblical word Mizpah—that potent word that has been a pledge in so many hearts: "The Lord watch between me and thee, when we are absent one from another."

Maury on this cruise was away nearly three years. Then he came home to a wedding.

On the *Falmouth* Maury again went down across the hot equator, circled out to the left around Cape St. Roque, passed Pernambuco and Bahia, and after three hundred leagues more along the Brazilian coast entered again the wondrous harbor of Rio. At home the time was midsummer; in Rio it was midwinter.

After a short stay at Rio the *Falmouth* went on far south, rounded Cape Horn, and by the end of October arrived at Valparaiso, "Vale of Paradise." In a recent issue of the *National Geographic Magazine,* February, 1929, the student of today may get enchanting glimpses of Valparaiso, the gateway, and Santiago, the capital—"Twin Stars of Chile."

For about a year the *Falmouth* tarried at Valparaiso. Maury was cordially received by the friends he had made there during his two years of coast service on the *Vincennes,* 1827 to 1829. He evidently enjoyed dinners and dances, and was invited to a great many by the hospitable and cultured young citizens of Valparaiso.

Towards the end of 1832 the *Falmouth* proceeded up the long, rugged coast of Chile, thence along the projecting shores of Peru, and entered the familiar harbor of Callao. In that region several months were occupied. And it was probably during this period that Maury had an adventurous experience on one of the neighboring islands, the island of San Lorenzo. He perhaps took this incident as a matter of course, but at least one of his associates saw in it a prophecy of fame.

San Lorenzo Island is just outside Callao. Maury was making a survey of it. His assistant was Whiting, later Captain Whiting, who tells the story. Whiting asserts that Maury scaled rocks and crept around corners of cliffs in such daring adventures that he (Whiting) was almost afraid to follow him. He did not seem to be thinking of the danger, only of the attainment of his purpose.

To make some necessary observations Maury landed on some rocks to the westward of San Lorenzo. Whiting remained in the boat. When he landed, there was almost a dead calm, and the sea was comparatively smooth. But by the time he had completed his observations a wind had sprung up, the tide had risen, and the sea was raging to such a degree that the boat could not get up to the rock without being smashed. One minute it was pitched up

almost upon the rock, the next it would be thrown back twenty or thirty feet. Calling Whiting to approach in the boat as near as he dared, Maury climbed up on a high point of rock, took off his jacket, wrapped up in it his watch and sextant, tied the roll with a string that he happened to have in his pocket, and then threw the bundle as near to the boat as he could. A man in the boat, with a boathook, managed to catch the bundle before it sank and dragged it into the boat. Maury then, watching the rise of a wave, sprang upon it and, being a good swimmer, reached the boat in safety.

"But," says Whiting, "it was a fearful leap."

When Whiting, talking about this incident with his messmates, prophesied that Maury would become a distinguished man, they laughed at him; but Whiting did not modify his opinion.

It was aboard the *Falmouth,* no doubt, that Maury stumbled upon his chief path to fame. He was sailing master of the sloop, and was anxious to make the voyage as speedily as possible. Much to his disappointment he was not able to find any accessible information about the winds and currents, or the best sea paths for ships to take. He had to observe for himself. He also began to collect information from every available source. Out of his need his vision came. Necessity again was the mother of invention. And in supplying others, during succeeding years, with what he had himself lacked on this long voyage, he made his name known and loved around the world.

On August 20, 1833, shortly after the *Falmouth* had

left Callao, Maury was transferred to the schooner *Dolphin.* During his few weeks on the *Dolphin* he performed the duties of first lieutenant. Then he was put upon the frigate *Potomac,* Captain John Downs. It would appear that he joined the *Potomac* at or near Callao; but in a short time this good ship headed south, homeward bound. About the middle of December she touched at Valparaiso.

The evening before the *Potomac* left Valparaiso a young officer of the Chilean army came on board and sought an interview with Maury. He told Maury that he had destroyed all his hopes of happiness. A young lady of Valparaiso, Manuela Poma, to whom he had proposed marriage the preceding day, had rejected him, declaring that she loved Maury.

The situation was difficult at the best. If Maury had lacked good sense, frankness, or tact, it would have been worse. Maury regarded the young woman as a good friend, nothing more, and so stated. With him nobody could take the place of Ann Herndon. But he was much distressed over the unhappy situation, and wrote a long letter to Manuela, sending it to her by a ship that was going back to Valparaiso.

Not long thereafter the *Potomac* rounded Cape Horn, coming east. Nothing out of the ordinary occurred until she came up opposite the Falkland Islands. There she came near being crushed by icebergs. Having escaped these silent white monsters of the frigid South, she came far north into the tropics; crossed the torrid equator; swept on up into temperate waters, and early in the summer of 1834 docked at Boston.

Many times thereafter Maury sailed the seas in ships, but this was the end of his last cruise as an officer of the United States navy. For nine years he had been actively engaged in almost continuous sea service. He had won distinction and had laid the foundations for broader achievements. His plans and expectations pointed to other cruises, but Providence shaped his destiny otherwise, as we shall see.

At Boston Maury learned, soon after his arrival there, that fair Manuela of the "Vale of Paradise" had died of consumption.

CHAPTER VII

THIRTEENTH ON A STAGECOACH

ON JULY 15, 1834, Lieutenant Maury and Ann Hull Herndon were married. The old homestead at which the wedding took place, with Rev. Dr. Maguire, of Fredericksburg, officiating, is located in upper Spotsylvania County, fourteen miles southwest of Fredericksburg, and the house is still standing, though abandoned and falling into ruin. The spacious northeast room, with wide fireplace, in which the ceremony was performed, is fairly well preserved.

This old house, in which tradition has it that George Washington attended school when a boy, is located near the headwaters of the Po River, not far from the line between Spotsylvania County and Orange, and is on a direct line between Charlottesville and Fredericksburg. In 1825 it was the home of Maury's aunt, Mrs. Edward Herndon. There he stopped on his way to join the navy, and there he first met his cousin, Ann Herndon, whom he married in the same house nine years later. Relatives of the Maurys and Minors still live in the vicinity, and fondly cherish all the history and romance with which the quaint old place is invested.

The young couple soon "went to housekeeping" in Fredericksburg, in a house that is still well preserved on

Charlotte Street, between Princess Anne and Prince Edward. A stone marker in the sidewalk in front of the house calls attention to Maury's residence there. In this house the Maurys lived most of the time during the next six or seven years, and there their first children were born.

Here also Maury made his first adventures into the fascinating but uncertain fields of book writing. A certain issue of the *American Journal of Science and Arts* contained two scientific articles from his pen, one on the navigation of Cape Horn, the other on an instrument for finding the true lunar distance—a device of Maury's invention. Encouraged by the publication of these papers, he proceeded upon the completion of a book on navigation which he had begun at sea. This work, entitled *A New Theoretical and Practical Treatise on Navigation,* was published in Philadelphia in 1836, and soon won the approving notice of scholars and reviewers. In June, 1836, a most interesting review of the new book appeared in the *Southern Literary Messenger* from the facile pen of Edgar Allan Poe.

Within the next few years Maury's new volume was generally adopted as a textbook for junior officers in the navy; and when the United States Naval Academy was established at Annapolis in 1845 it was used there for several years as the basis of instruction in navigation for midshipmen. It was the first work in nautical science to come from the pen of an officer of the United States navy.

President Jackson thought that Maury should be promoted for his scientific work and reimbursed for the

money he had spent on his book, but the views of the President in this matter were not made effective.

In Fredericksburg Maury delivered occasional lectures on scientific subjects; he also took up the study of mineralogy, geology, and drawing. Soon he was made superintendent of the United States gold mine near Fredericksburg, and brought about helpful changes in the business and work at the mine. On June 10, 1836, he had been promoted to the rank of lieutenant in the navy. This probably influenced his decision to remain in the navy. About this time he was offered a position as a mining engineer.

In March, 1837, Maury was attached to the *Macedonian,* one of a small squadron which President Jackson was planning to send on an exploring expedition to the South Seas. In the following September he was appointed astronomer for the expedition, with $1,000 added to his pay. The next spring, however, being dissatisfied with the management, he resigned from the expedition. But in the meantime he made a substantial gain. For several months he worked in an observatory in Philadelphia, learning how to use the astronomical instruments. This proved a valuable part of his education.

During the summer of 1838 Lieutenant Maury published five articles in the Richmond *Whig,* in which he criticized the former Secretary of the Navy and appealed to his successor to make various improvements. These articles were signed with a striking pen name, appropriate to a sailor and a man of Maury's character—"Harry Bluff." His criticisms were not only outright and direct,

they also were witty and keen. They showed the writer's clear insight into public questions, his fearlessness in attacking abuses, and his skill in turning words into weapons. In December of the same year he wrote seven more articles for the *Whig*. This time they came from "Will Watch to his old messmate, Harry Bluff." In these papers Maury not only criticized certain bad methods in the building and repairing of ships and in the training of young men for the navy, but also advocated the founding of a naval academy. As we have seen, the Naval Academy was established at Annapolis seven years later —1845.

The sailor was still on the watch. He was still bluff. Not only so, but his eyes were keen. The occasional fogs did not confuse him, and his vision was continually reaching farther and farther.

In January, 1839, Maury had an article in the *Southern Literary Messenger* on "Direct Trade with the South." He strongly advocated a line of steam packets between Norfolk and Havre. He pointed to the packet ships of New York, showing their influence over the commerce of the United States and their effects on American naval architecture. A two-page map is at the beginning of the magazine.

In appealing to the sons of the South in this article, Maury breaks out in one of his graphic figures, so characteristic of him:

"Their motto is DIRECT TRADE ON SOUTHERN BOTTOMS. With ships for steeds, their tiltyard is the sea, and nations will be spectators at the tournament."

Early in August, 1839, after several months spent in assisting to survey various harbors of the Carolinas and Georgia, Maury left ship at Norfolk with a month's leave, spent a few days at home in Fredericksburg, and then went to Tennessee to visit his parents. His father had become old and infirm. Maury was planning to bring his parents back to Virginia, to a home with him.

Having orders to join the brig *Consort* in New York to continue the surveying of Southern harbors, Maury left the old home on the Harpeth for the North. He traveled by stagecoaches, and took a route this time that led through Kentucky and southeastern Ohio. One rainy night, about one o'clock in the morning, the heavy coach upset. A dozen other persons were in the coach and on it, but Maury, who was outside with the driver, was the only one seriously injured. His right knee joint was dislocated and his thigh bone fractured.

For three months he lay suffering at Somerset, Ohio, near which town the accident had occurred. To pass the time and keep up courage he studied French.

By January, 1840, Maury thought he could go on to New York. The snow-clad Alleghanies were crossed in a sleigh. After various delays and the lapse of time necessary to a long journey he reached New York to find that the *Consort* had already sailed. He then went home to Fredericksburg, where he tried to recover health and strength and work out a new plan of life. He was still anxious to serve in the navy, but was fearful that his injury would be a serious handicap. In March he applied to the Secretary of the Navy for some work that he might

be able to do "on crutches," but none was given him. He then took up his pen and began to write again under his former pseudonym of "Harry Bluff." Soon "Scraps from the Lucky Bag," a series of articles on various topics of public interest, began to make him famous.

Maury, the victim of two serious accidents, seemed unlucky; but, as events proved, the sufferings and disappointments that followed upon those accidents resulted in great and permanent values to the world. His fall from a tree sent him to school; his stagecoach injury drove him into wider fields of trenchant writing.

CHAPTER VIII

SCRAPS FROM THE LUCKY BAG

"EVERY man-of-war, you know, has her *lucky bag,* containing a little of everything, and something belonging to every body. For variety of contents, a regular lucky bag may vie with the caldron that witches boil and bubble at the pit of Acheron."

These are two of the opening sentences of the first of that remarkable series of articles that Maury wrote for the *Southern Literary Messenger* of Richmond, in 1840 and 1841. The lucky bag that he opened contained many different things, yet they all pertained to the same subject, the United States navy. They were all of general interest, not only because the navy belonged to everybody, but also because Maury discussed his topics in an entertaining style. He laid hold upon them with the sure touch of a master. For a short time he hid behind the clever pen name of "Harry Bluff," but the reading public were not satisfied very long with a pseudonym—they discerned a man of unusual power behind the mask, and they wanted to know his real name.

"Scraps from the Lucky Bag" were presented in four or five long articles. There were four in the regular series, the first appearing in April, 1840, the last in January, 1841. In February came a brief supplement, in which a

few corrections were made; and then in June, 1841, appeared a fifth long article, "More Scraps from the Lucky Bag." This paper was evoked by various criticisms, which it answered. It also reenforced certain statements made in former articles, supporting them with additional citations and illustrations.

Maury's main thesis in these papers was, "The navy requires re-organization." In "Scraps" No. I he pointed out the need of more grades in the scale of promotion for officers. The ranks of lieutenant, commander, and captain were no longer enough. He advocated the usual ranks up to admiral, citing instances in which United States naval officers had been placed in awkward situations in foreign countries because their titles did not enable them to take the social rank they deserved by virtue of their services. He referred especially to the cases of Captain Isaac Hull and Captain Charles Stewart, both of long and distinguished service, who still held the same rank they had held twenty-eight years earlier, when they entered the War of 1812. He pleaded also for a larger navy, one that would be adequate to enforce the laws against the African slave trade and to protect our commerce in China, South America, and elsewhere.

The second article repeated the charge that our navy was inadequate to the needs of our commerce. "The government," Maury asserted, "has sunk into an apathy with regard to the navy, from which it seems nothing short of actual warfare can arouse it."

He earnestly desired peace, but urged "in peace be prepared for war." The fact that we had only two ships of

war off Buenos Aires while France had thirty or forty disturbed him not a little. He advocated more and better coast defences, and was strongly of the opinion that midshipmen should have better training to fit them to be officers. He pointed to notable professional books that had been written by army officers, and deplored the lack of such books by men of the navy. For the training of naval officers he proposed among other things a special school ship. In criticizing the methods that were employed in "educating" young men in the navy, Maury recited some of his own experiences, as follows:

"The first ship, Mr. Editor, that I sailed in, had a schoolmaster—a young man from Connecticut. He was qualified and well disposed to teach navigation, but not having a schoolroom, or authority to assemble the Midshipmen, the cruise passed off without the opportunity of organizing his school. From him, therefore, we learned nothing. On my next cruise, the dominie was a Spaniard; and, being bound to South America, there was a perfect mania in the steerage for the Spanish language. In our youthful impetuosity we bought books, and for a week or so, pursued the study with great eagerness. But our spirits began to flag, and the difficulties of *ser* and *estar* finally laid the copestone for us over the dominie's vernacular. The study was exceedingly dry. We therefore voted both teacher and grammar a bore, and committing the latter to the deep, with one accord declared, in favor of the Byronical method—

> 'Tis pleasant to be taught in a strange tongue
> By female lips and eyes;

and concluded to defer our studies till we should arrive in the South American vale of paradise, called Valparaiso.

"After arriving on that station, the Commander, who had often expressed his wish that we should learn to speak Spanish, sent down for all the 'young gentlemen,' as the Middys are called, and commenced to ask us one by one: 'Can you speak Spanish?' 'No, sir.' 'Then you are no gentleman.' 'Can you?' But always receiving the same answer, he sent us out of the cabin as a set of blackguards. As he was as ignorant on this subject as any of us, we included him among the number, and thought it an excellent joke. Thus ended our scholastic duties in that ship.

"I was afterwards transferred to another vessel in which the schoolmaster was a young lawyer, who knew more about *jetsum* and *flotsum* than about lunars and dead reckoning—at least I presume so, for he never afforded us an opportunity to judge of his knowledge on the latter subjects. He was not on speaking terms with the reefers—ate up all the plums for the duff, and was finally turned out of the ship as a nuisance.

"When I went to sea again, the teacher was an amiable and accomplished young man, from 'the land of school masters and leather pumpkin seed.' Poor fellow!—far gone in consumption, had a field of usefulness been opened to him, he could not have labored in it. He went to sea for his health, but never returned. There was no schoolmaster in the next ship, and the 'young gentlemen' were as expert at lunars, and as *au fait* in the mysteries of latitude and departure, as any I have seen. In

HOUSE IN FREDERICKSBURG, VIRGINIA

Here Mr. and Mrs. Maury lived the first seven years after marriage.

JEWEL CASKET

Presented to Maury by friends and admirers in London in 1856.

Yours truly

M. T. Maury

Lt U. S. A.

my next ship, the dominie was a young man, troubled, like some of your correspondents, Mr. Editor, with *cacoethes scribendi.* He wrote a book. But I never saw him teaching 'the young idea,' or instructing the young gentlemen in the art of plain sailing; nor do I think it his fault, for he had neither schoolroom nor pupil.

"Such is my experience of the school system in the navy; and I believe that of every officer will tally with it."

Maury made a plea for more extended and thorough courses of education for naval officers. Among the subjects of study that he thought desirable for them were international law, drawing, naval architecture, and languages, in addition to those more usual.

This second paper of "Scraps" covers fourteen and a half large pages, double column, of rather small type. One reason for the success of the series was their charming literary style. Bits of history, reminiscence, and scientific fact are adroitly woven in for illustration, argument, or entertainment.

In the *Messenger* of July, 1840, some one who signs himself "Eau Douce" contributed a short article, mainly tables of figures, intended apparently to show that the navy had made considerable growth between 1830 and 1840. It evidently was intended as a mild protest against some of Maury's charges.

"Scraps" No. III came out in the December, 1840, *Messenger.* In this number Maury continued to advocate better education for naval officers. And he was of the opinion that the teachers should be naval officers. In this paper is a rather extended discussion of making reckon-

ings of latitude and longitude at sea, intended evidently to show the need for better methods. Many historical instances are cited as illustrations. There is also a graphic description of the movements of ships in battle, with comments and suggestions.

In the fourth paper, which appeared in January, 1841, a number of the topics previously discussed were touched upon again. The ways and means employed in the trials of naval officers were criticized, and a considerable part of the paper was directed against the waste of money that was being suffered in the building and repairing of ships. The high cost of work done in the public dockyards, as compared with the lower cost of the same kind of work done elsewhere, was set forth by figures in numerous instances. Waste and extravagance were charged and clearly shown.

The following month, February, 1841, "Harry Bluff" contributed the short supplement to the "Lucky Bag" series, already referred to, in which he made a few corrections and expressed his thanks to certain persons for aid given him.

The next issue of the *Messenger* (March, 1841), contained an extended reply to "Harry Bluff." The signature to this criticism was merely "C. S." And no address was given. But the editor of the *Messenger,* Mr. Thomas W. White, was of the opinion that the writer was one of rather high authority in the navy. Mr. White did not think that the protests of "C. S." were very well founded, and therefore took up cudgels rather blithely for "Harry Bluff." In the April *Messenger* another writer warmly

commends "Harry Bluff" and expresses the hope that his criticisms will lead to a reorganization of the navy.

The next number of the *Messenger* was a double issue, and served for both May and June. In it appeared "Harry Bluff's" fifth article, a long one, entitled "More Scraps from the Lucky Bag," in which he answered various criticisms and reenforced his former statements with additional proofs. In the same issue of the *Messenger* a writer of Frankfort, Kentucky, who signs himself "L," commends Maury's articles and says:

"The author has not only afforded great pleasure to your numerous readers, but has conferred a benefit of no small magnitude on his country."

And in the October issue of the magazine "Union Jack," of Council Bluff, commends Maury's views, approving especially his proposal for a national dockyard for steamers on the Mississippi River.

The wide interest aroused by "Scraps from the Lucky Bag" made it almost necessary that the identity of the writer should be revealed. Accordingly, in the *Messenger* of July, 1841, appeared a biographical sketch of Maury, alias "Harry Bluff." It was an extended account covering several pages, and was signed "A Brother Officer." The latter declared that Maury had given evidence of unusual courage and desire for knowledge from the very beginning of his career in the navy. For example, it was stated that on the *Brandywine,* in the midst of the furious storms that either terrified or sickened most of the new middies, Maury continued to pursue diligently his study of mathematics. With reference to the importance of his

recent discussions of the navy, he was compared by this writer to Lord St. Vincent, reformer of the British navy. The final paper in the "Scraps" series was declared to be one of the most powerful essays ever written in this country.

CHAPTER IX

WATERS, WINDS, AND STARS

"SCRAPS from the Lucky Bag" raised Maury to such a pinnacle of popularity that many persons urged his appointment as head of the navy department. President Tyler, it is said, had at one time about decided to make him Secretary of the Navy.

In November, 1841, Maury applied again for active service. Although he was lame from the accident suffered two years before, he wished to go to sea again, and felt able to perform any of the lighter duties of an officer on board ship. He made a special request that he be appointed flag lieutenant in the Pacific squadron under Commodore Catesby Jones. Due perhaps to the intervention of brother officers, he was not sent to sea; but within a short time Secretary of the Navy Upshur made him Superintendent of the Depot of Charts and Instruments at Washington.

On July 1, 1842, Maury took charge of his new post. He was then thirty-six years old. It was seventeen years since he had entered the navy as a midshipman. A dozen of those years had been spent on ships, on many seas; the remainder here and there on land; but every year had been well employed. The tireless student was also the alert man of affairs. The ambitious young officer was also the

earnest citizen and patriot. He was keen in his criticisms, but also sane and constructive in his ideas and purposes. The quiet workshops at Washington were to be quickened by his genius. The storms of the oceans and the thunder of the volcanoes had spoken to him. He now was to interpret the still small voice of the written pages, the neglected records of unnumbered and unnamed writers, and give them to a waiting world in a language that all could read and understand.

About the time Maury went to Washington with his family, new buildings were being constructed for the Depot at 23d and E Streets, where the Naval Medical School is now located. On August 31, 1842, Congress appropriated $35,000 for buildings and equipment. Today this sum appears small, but at that time it was considerable. Much care was exercised in the spending of this money, and some excellent structures, instruments, and pieces of machinery were provided. Soon Maury persuaded Congress to appropriate $10,000 more to install an electro-chronograph, an important device for determining longitude by the aid of the magnetic telegraph.

In 1844 the new buildings, including an astronomical observatory, were completed. About the same time the name of Depot of Charts and Instruments was dropped and the institution was called the Naval Observatory; sometimes the National Observatory. For ten years this was the practice; then in 1854 the name was changed to U. S. Naval Observatory and Hydrographical Office. As superintendent, director, and chief worker in this great and growing institution Maury faced rich opportunities,

and turned them to marvelous results. The waters, the winds, and the stars yielded up their secrets and multiplied their treasures.

At the beginning of his work in the Depot of Charts and Instruments Maury discovered in the neglected old log books that were stored there, many interesting facts concerning the Gulf Stream; and in July, 1843, he delivered an address on the Gulf Stream and its causes before the President, the diplomatic corps, and various high government officials. This address was revised and presented to several learned societies within the next year. About the same time he read a paper before the National Institute in which he outlined a plan for supplying ship captains with blank charts on which the tracks of their ships were to be indicated from day to day. Thus, from the old log books, which had been stored away for years as rubbish, he extracted ideas as well as information. Every master on every ship on every sea was to be enlisted in gathering new facts for a new science. The paths of the seas were to be located and charted and named. Every man who went down to the sea in ships was to have a guide book in his hand before he left the harbor.

It should be remembered, of course, that Maury had a number of able assistants at the National Observatory. Some of these men were expert in mathematics, and all were skilled workers; but it was his fertile brain and tireless energy that made the work so rich in happy results.

In 1845 he began to make a catalogue of the stars. It was his aim to study every visible star through the telescope, record its position, size, and color; make drawings

of all clusters, and add definite notes of other facts of interest and value to astronomers. It was a tremendous task, and because some of his best helpers were called to other fields of duty Maury was never able to complete it; but during the next ten years one hundred thousand stars were catalogued. In 1846 and in 1851 he published important volumes of astronomical observations. These attracted most favorable notice in both America and Europe.

But wonderful as this work was proving with the stars, the secrets of the old log books were turning out to be more useful. After nearly five years spent in studying those dust-covered tomes, supplementing his own first-hand knowledge, Maury published an epoch-making chart. It was entitled "Wind and Current Chart of the North Atlantic." It was the first great map of its kind for the guidance of ships in the open seas.

This was in the autumn of 1847. Within the next year or so at least five thousand copies of this chart had been placed in the hands of shipmasters, and the long voyages were being shortened by days and weeks. It was as if a friendly wizard in seven-league boots had suddenly risen out of the waves to lead the merchant vessels by the shortest and quickest paths.

And, as we have already seen, the facts in the old log books were to be enlarged and enriched by new details, gathered in a more systematic way. Most of the skippers who found the chart of 1847 useful, heeded Maury's request to send him new logs filled out according to his directions. By 1851 a thousand captains, far and near upon all the oceans, were making observations and records

of winds and currents and sending him reports. These were used in making other and better charts, and in writing out more definite directions for the guidance of captains in sailing their ships. When time and money were being saved, it was not hard to get attention and co-operation. Men who could not at first share Maury's vision and enthusiasm, had to recognize the arguments of hard facts and sound dollars.

As busy as Maury must have been after going to Washington, reading old log books, making charts of winds and ocean currents, distributing blank charts to get more facts, and cataloguing the stars, we are surprised at the number of other things he did. He continued to write for the *Southern Literary Messenger,* and in 1843, for some months after the death of the editor, Mr. White, he acted as editor of the magazine. As early as 1844 and 1845 he pointed out the need of a ship canal to connect the Great Lakes with the Mississippi River. Such projects he championed not only by means of the press but also in public addresses which he made in different cities. For example, in the autumn of 1845 he attended a convention at Memphis and took a prominent part in the discussion of various important questions. He emphasized the need of the ship canal already mentioned. He also urged that the Mississippi River below New Orleans be deepened; that more lighthouses be erected around the Gulf of Mexico and on the coast of Florida; that mails be carried across the continent to Oregon at least once a month.

This was fifteen years before the Pony Express and

twenty-four years before the first railroad across the Rockies.

In October, 1849, another convention, representing fourteen States, was held in Memphis. Maury was president of this convention, and advocated the building of a railroad across the Rocky Mountains and the construction of a railroad or a canal across the Isthmus of Panama. Just the year before, the United States, by war with Mexico, had pushed her boundaries southwest to the Pacific, and gold had been discovered in California. Thousands of men were turning their eyes and their paths towards the Golden Gate, but the way was long and difficult. Maury's vision was quick to see the remedies, but the years were slow in providing them. It was still to be twenty years before the first railroad crossed the continent and sixty-six years before the Panama Canal was opened.

Not content with charting the currents, gauging the winds, and cataloguing the stars, Maury was also trying to sound the ocean depths. He wanted to know what the floors of the sea were like. It was not long until he came to believe that the Atlantic between Newfoundland and Ireland was shallow enough and the bottom level and smooth enough that a cable might be laid across that way. In 1849 Congress provided three ships that were to be used in testing this matter and in making such other investigations as Maury might think advisable. Captain John Mercer Brooke who, in 1862, designed the ironclad *Merrimac (Virginia),* invented a mechanical apparatus for measuring deep water, and this was used with fine results. The sea bottom, northeast from Newfound-

land, was found to be comparatively shallow. Maury thought of it and spoke of it as the "Telegraphic Plateau"; and in a few years the first cable was laid across the Atlantic by that route.

Thus again three little ships sailed into American history. In 1492 three little ships brought over Columbus. In 1607 three little ships carried the first Englishmen to Virginia; and in 1849 three little ships sailed eastward, tracking out a path under the great waters by which the New World might hide its secrets from the storms and whisper daily into the ear of the Old World.

That Maury's notable achievements were duly recognized by learned bodies is shown by the fact that in 1847 the University of North Carolina made him a Master of Arts, and in 1852 a Doctor of Laws.

CHAPTER X

FACTS FOR FARMERS

SHIPS sail on top of the great oceans of water, but at the same time the whole human race is living and moving at the bottom of the encircling ocean of air. While Maury was charting the seas for sailors, he was also thinking of others, particularly the farmers. The sailors, especially in those days when their canvases were lifted up like great white wings against the wind, depended largely on the currents of the air for power. The farmers, then as now, also depended on the winds, not so much for power as for life and health and wealth. Plants and animals need air and water; and it often makes a great deal of difference to the farmer, as well as to the sailor, if he knows a few hours or a day in advance that a storm is coming, and from what direction.

"The ocean of air," says Maury, "like the ocean of water, is never at rest. It has its waves and its currents. . . . A body of air in motion is called wind. . . . Three offices of winds may be mentioned: (1) they keep the elements of the atmosphere uniformly mixed by maintaining a constant circulation; (2) they bear vapor from the sea to the land, and thus water the earth; (3) they carry heat imprisoned in the particles of vapor, from the overheated regions of the earth to the colder ones, and in

this way make the torrid regions cooler, and the temperate and polar warmer than they would otherwise be. Discharging these various offices, they verify the Psalmist's words, 'God maketh the winds his messengers'."

As early as 1851 Maury was planning and urging a system to give weather information to the farmers. His plan was similar to that by which he was getting and giving information to the merchants and sailors. Every man interested was to co-operate: as he received information from day to day, he was to observe weather conditions where he was and telegraph a report to Washington. By this means a small service by each one of many was to confer great benefits upon all.

It was forty years before our national weather bureau was thoroughly organized, but for more than half of that period—as long as he lived—Maury was an outstanding champion of the cause. He traveled extensively over the country, addressing agricultural societies in different States, urging the farmers to co-operate in sending in regular reports of the temperature, the direction of the winds, and the condition of their crops. He asked Congress to appropriate money for a central office to receive these reports and telegraph the findings daily to all parts of the Union.

In an address which he delivered before the United States Agricultural Society at Washington, in 1856, Maury said:

"It may be asked, what have the farmers to do with sanitary meteorology? I would answer, everything. The atmosphere is a great basin which envelopes this globe,

and every plant and animal that grows thereon is dependent for its well-being upon the laws which govern and control the wind in its circuits, and none more so than man, the lord of all. To study these laws, we must treat the atmosphere as a whole. We have now the sea made white with floating observatories all equipped with instruments that are comparable, observing the same things according to a uniform method, and recording these observations according to a universal plan. . . . We want to see the land, therefore, spotted with co-labourers observing also, according to some uniform plan, such as may be agreed upon with the most distinguished meteorologists at home and abroad; and I have addressed myself to the agricultural interests of the country, because they have the deepest stake in the fence."

About the same time he wrote to a kinsman in Virginia that the legislature of Missouri had authorized the establishment of five weather observatories, voting the money necessary for them, and that they were ready to co-operate with his plans. Not long afterwards eight cities around the Great Lakes, including Buffalo, N. Y., petitioned Congress to establish a general system of daily telegraphic reports on the winds and the weather for use at a central office.

This petition was due to Maury's writings and lectures on the subject.

The Secretary of the Navy made flattering reference to Maury's work on the sea and his plans for extending similar methods to the land in no less than seven of his annual reports between 1850 and 1860. Like recognition was

given him by the Senate Committee on Naval Affairs in its report of 1855; and also by the President of the United States in his annual message of 1851.

In 1857 a bill was before Congress to appropriate $20,000 to establish a system of daily weather observations. In advocating this measure Senator James Harlan said:

"It is believed that the Superintendent of the Observatory can obtain the necessary co-operation to enable him to subject the atmosphere to this system of research by an appeal to the farmers similar to that made to the mariners, if the Government will furnish appropriate instruments and defray the expense of transmitting this intelligence to the Hydrographical Office. . . . It would be highly desirable to be able to receive from all parts of the country daily reports by telegraph. In this way the condition of the atmosphere in every part of the country, the presence of a storm in any quarter, its direction, its force, and the rapidity of its march could be known at every point any hour of the day. Simultaneous reports from the various stations of the character of the weather, being received and combined at the central office, could not fail to afford results of the highest interest and advantage to every industrial pursuit.

"Storms, having their origin in one part of the world and taking up their line of march for another, may be thus narrowly watched by the mariner in communication with the land, in many instances for days before they would reach his shipping. Being forewarned, he could adopt the necessary means to evade their fury. The same

intelligence thus communicated to the farmer and outdoor laborer would be equally useful in its results."

This bill did not become a law, and Maury was disappointed in his hopes for such a system of weather observations and reports; but when the United States Weather Bureau was finally established, it followed Maury's plan in large measure.

MRS. MATTHEW FONTAINE MAURY

SERVICE OF SILVER

Presented to Maury by the Merchants and Underwriters of New York City in 1853.

CHAPTER XI

A LONG RACE

WHAT do you think of a race course fifteen thousand miles long? The track an invisible path in the sea? The racers ships with great white sails?

Maury, as we have seen, after long study of many records kept by the masters of sailing vessels, marked out on charts the best routes for ships to follow. By taking advantage of currents and prevailing winds, as shown in the charts, captains shortened their voyages by weeks and months; merchants cut down their expenses by hundreds and thousands of dollars; eager passengers landed in advance of their fondest hopes. It was this great service in making charts and writing sailing directions that proved the creation of a new science and gave Maury his proudest title, "Pathfinder of the Seas."

In 1849 began the great rush to California. Gold! was the cry. Some of the gold seekers drove wearily across the plains in creaking ox carts; some shipped to Panama, crossed the dangerous Isthmus, then waited weeks or months for a ship on the other side; and many, boarding a vessel at Philadelphia or New York, spent six months on the oceans, rounding the treacherous Horn, crossing the equator a second time, and looking with impatient eyes for the Golden Gate.

Before Maury's charts came into use, the average time of passage from New York to San Francisco, around Cape Horn, was about 180 days—just six months! By the year 1855 the average time for the same passage had been reduced to 133 days. And now and then some staunch, swift ship, in skillful hands, falling upon good luck and following Maury's directions closely, made the long voyage in a hundred days or less.

One of the most interesting stories ever written is Maury's own account of a race by four ships in the winter of 1852-53. This story appeared in 1855, in his *Physical Geography of the Sea,* in the chapter on trade routes. In that chapter he makes a few general observations, then tells the story, as follows:

"When one looks seaward from the shore, and sees a ship disappear in the horizon as she gains an offing on a voyage to India, or the Antipodes perhaps, the common idea is that she is bound over a trackless waste, and the chances of another ship, sailing with the same destination the next day, or the next week, coming up and speaking with her on the 'pathless ocean,' would to most minds seem slender indeed. Yet the truth is the winds and the currents are now becoming so well understood that the navigator, like the backwoodsman in the wilderness, is enabled literally to blaze his way across the ocean; not indeed, upon trees, as in the wilderness, but upon the wings of the wind.

"The results of scientific inquiry have so taught him how to use these invisible couriers that they, with the calm belts of the air, serve as sign-boards to indicate to

him the turnings, and forks, and crossings by the way.

"Let a ship sail from New York to California, and the next week let a faster one follow after: they will cross each other's path many times, and are almost sure to see each other by the way.

"Thus a case in point happens to be before me. It is the case of the *Archer* and the *Flying Cloud* on their last voyage to California. They are both fine clipper ships, ably commanded. But it was not until the ninth day after the *Archer* had sailed from New York that the *Flying Cloud* put to sea, California bound also. She was running against time, and so was the *Archer,* but without reference to each other. The *Archer,* with Wind and Current Charts in hand, went blazing her way across the calms of Cancer, and along the new route, down through the northeast trades to the equator. The *Cloud* followed after, crossing the equator upon the trail of Thomas of the *Archer.* Off Cape Horn she came up with him, spoke him, handed him the latest New York dates, and invited him to dine on board the *Cloud,* which invitation, says he of the *Archer,* 'I was reluctantly compelled to decline.'

"The *Flying Cloud* finally ranged ahead, made her adieus, and disappeared among the clouds that lowered upon the western horizon, being destined to reach her port a week or more in advance of her Cape Horn consort. Though sighting no land from the time of their separation until they gained the offing of San Francisco—some six or eight thousand miles off—the tracks of the two vessels were so nearly the same that, being projected on the Plate IX, they would appear almost as one.

"This is the great race-course of the ocean. It is fifteen thousand miles in length. Some of the most glorious trials of speed and of prowess that the world ever witnessed have taken place over it. Here the modern clipper ship—the noblest work that has ever come from the hands of man—has been sent, guided by the lights of science, to contend with the elements, to outstrip steam, and astonish the world.

"The most celebrated and famous race that has ever been run came off upon this course. It was in the autumn of 1852, when navigators were beginning fully to reap the benefits of these researches with regard to the winds and currents, and other facts connected with the physical geography of the sea, that four splendid new clipper ships put to sea from New York, bound for California. They were ably commanded, and, as they passed the bar at Sandy Hook, one by one, and at various intervals of time, they presented really a most magnificent spectacle.

"The names of these ships and their masters were, the *Wild Pigeon,* Captain Putnam; the *John Gilpin,* Captain Doane; the *Flying Fish,* Captain Nickels; and the *Trade Wind,* Captain Webber.

"Like steeds that know their riders, they were handled with the most exquisite skill and judgment, and in such hands they bounded out upon the 'glad waters' most gracefully. Each, being put upon her mettle from the start, was driven, under the seaman's whip and spur, at full speed over a course that it would take them three long months to run.

"The *Wild Pigeon* sailed October 12; the *John Gilpin,*

October 29; the *Flying Fish,* November 1; and the *Trade Wind,* November 14. It was the season for the best passages. Each one was provided with the Wind and Current Charts. Each one had evidently studied them attentively; and each one was resolved to make the most of them, and do his best. All ran against time; but the *John Gilpin* and the *Flying Fish* for the whole course, and the *Wild Pigeon* for part of it, ran neck and neck, the one against the other and each against all. It was a sweepstake with these ships around Cape Horn and through both hemispheres.

"*Wild Pigeon* led the other two out of New York, the one by 17, the other by 20 days. But luck and chances of the winds seem to have been against her from the start. As soon as she had taken her departure she fell into a streak of baffling winds and then into a gale, which she fought against and contended with for a week, making but little progress the while; she then had a time of it in crossing the horse latitudes. After having been 19 days out, she had logged no less than thirteen of them as days of calms and baffling winds. These had brought her no farther on her way than the parallel of 26 degrees north in the Atlantic. Thence she had a fine run to the equator, crossing it between 33 degrees and 34 degrees west, the 32d day out. She was unavoidably forced to cross it so far west; for only two days before, she crossed 5 degrees north in 30 degrees west—an excellent position.

"In proof that the *Pigeon* had accomplished all that skill could do and the chances against her would permit, we have the testimony of the barque *Hazard,* Captain Pollard. This vessel, being bound to Rio at the same time,

followed close after the *Pigeon*. The *Hazard* is an old hand with the Charts. She had already made six voyages to Rio with them for her guide. This was the longest of the six, the mean of which was twenty-six and a half days. She crossed the line this time in 34 degrees and 30 minutes west, also by compulsion, having crossed 5 degrees north in 31 degrees west. But, the fourth day after crossing the equator, she was clear of Cape St. Roque, while the *Pigeon* cleared it in three days.

"So far, therefore, chances had turned up against the *Pigeon,* in spite of the skill displayed by Putnam as a navigator, for the *Gilpin* and the *Fish* came booming along, not under better management, indeed, but with a better run of luck and fairer courses before them. In this stretch they gained upon her—the *Gilpin* seven and the *Fish* ten days; so that now the abstract logs show the *Pigeon* to be but ten days ahead.

"Evidently the *Fish* was most confident that she had the heels of her competitors. She felt her strength and was proud of it. She was most anxious for a quick run, and eager withal for a trial. She dashed down southwardly from Sandy Hook, looking occasionally at the Charts; but, feeling strong in her sweep of wing, and trusting confidently in the judgment of her master, she kept, on the average, 200 miles to leeward of the right track. Rejoicing in her many noble and fine qualities, she crowded on her canvas to its utmost stretch, trusting quite as much to her heels as to the Charts, and performed the extraordinary feat of crossing, the 16th day out from New York, the parallel of 5 degrees north.

"The next day she was well south of 4 degrees north, and in the Doldrums, longitude 34 degrees west.

"Now her heels became paralyzed, for Fortune seems to have deserted her a while—at least her master, as the winds failed him, feared so. They gave him his motive power. They were fickle, and he was helplessly baffled by them. The bugbear of a northwest current off St. Roque began to loom up in his imagination, and to look alarming. Then the dread of falling to leeward came upon him. Chances and luck seemed to conspire against him, and the mere possibility of finding his fine ship backstrapped filled the mind of Nickels with evil forebodings, and shook his faith in his guide. He doubted the Charts, and committed *the* mistake of the passage.

"The Sailing Directions had cautioned the navigator, again and again, not to attempt to fan along to the eastward in the equatorial doldrums; for, by so doing, he would himself engage in a fruitless strife with baffling airs, sometimes re-enforced in their weakness by westerly currents. But the winds had failed, and so too, the smart captain of the *Flying Fish* evidently thought, had the Sailing Directions. They advise the navigator, in all such cases, to dash right across this calm streak, stand boldly on, take advantage of slants in the wind, and, by this device, make easting enough to clear the land. So, forgetting that the Charts are founded on the experience of great numbers who had gone before him, Nickels, being tempted, turned a deaf ear to the caution, and flung away three whole days and more of most precious time, dallying in the doldrums.

"He spent four days about the parallel of 3 degrees north, and his ship left the doldrums, after this waste of time, nearly upon the same meridian at which she entered them.

"She was still in 34 degrees west longitude, the current keeping her back just as fast as she could fan east. After so great a loss her very clever master, doubting his own judgment, became sensible of his error. Leaving the spell-bound calms behind him, where he had undergone such trials, he wrote in his log as follows: 'I now regret that, after making so fine a run to 5 degrees north, I did not dash on, and work my way to windward to the northward of St. Roque, as I have experienced little or no westerly set since passing the equator, while three or four days have been lost in working to the eastward, between the latitude of 5 degrees and 3 degrees north, against a strong westerly set.' And he might have added, 'with little or no wind.'

"In three days after this he was clear of St. Roque. Just five days before him the *Hazard* had passed exactly in the same place, and gained two days on the *Fish* by cutting straight across the doldrums, as the Sailing Directions advised him to do.

"The *Wild Pigeon,* crossing the equator also in 33 degrees west longitude, had passed along there ten days before, as did also the *Trade Wind* twelve days after. The latter also crossed the line to the west of 34 degrees, and in four days after had cleared St. Roque.

"But, notwithstanding this loss of three days by the *Fish,* who so regretted it, and who afterwards so hand-

somely retrieved it, she found herself, on the 24th of November, alongside of the *Gilpin,* her competitor. They were then both on the parallel of 5 degrees south, the *Gilpin* being 37 miles to the eastward, and of course in a better position, for the *Fish* had yet to take advantage of slants, and stand off shore to clear the land. They had not seen each other.

"The Charts showed the *Gilpin* now to be in the best position, and the subsequent events proved the Charts to be right, for thence to 53 degrees south the *Gilpin* gained on *Pigeon* two days, and the *Pigeon* on the *Fish* one.

"By dashing through the Straits of Le Maire, the *Fish* gained three days on the *Gilpin;* but here Fortune again deserted the *Pigeon,* or rather the winds turned against her; for as she appeared upon the parallel of Cape Horn, and was about to double round, a westerly gale struck her and kept her at bay for ten days, making little or no way, except alternately fighting in a calm or buffeting with a gale, while her pursuers were coming up 'hand over fist' with fine winds and flowing sheets.

"They finally overtook her, bringing along with them propitious gales, when all three swept past the Cape, and crossed the parallel of 51 degrees south on the other side of the Horn, the *Fish* and the *Pigeon* one day each ahead of the *Gilpin.*

"The *Pigeon* was now, according to the Charts, in the best position, the *Gilpin* next, and the *Fish* last; but all were doing well.

"From this parallel to the southeast trades of the Pacific the prevailing winds are from the northwest. The posi-

tion of the *Fish,* therefore, did not seem as good as the others, because she did not have the sea-room in case of an obstinate northwest gale.

"But the winds favored her. On the 30th of December the three ships crossed the parallel of 35 degrees south, the *Fish* recognizing the *Pigeon.* The *Pigeon* saw only a 'clipper ship,' for she could not conceive how the ship in sight could possibly be the *Flying Fish,* as that vessel was not to leave New York for some three weeks after she did. The *Gilpin* was only 30 or 40 miles off at the same time.

"The race was now wing and wing, and had become exciting. With fair winds and an open sea, the competitors had now a clear stretch to the equator of 2500 miles before them.

"The *Flying Fish* led the way, the *Wild Pigeon* pressing her hard, and both dropping the *Gilpin* quite rapidly, who was edging off to the westward.

"The two foremost reached the equator on the 13th of January, the *Fish* leading just 25 miles in latitude, and crossing in 112 degrees 17 minutes west longitude; the *Pigeon* 40 miles farther to the east. At this time the *John Gilpin* had dropped 260 miles astern, and had sagged off several degrees to the westward.

"Here Putnam, of the *Pigeon,* again displayed his tact as a navigator, and again the fickle winds deceived him. The belt of northeast trades had yet to be passed. It was winter; and, by crossing where he did, she would have an opportunity of making a fair wind of them, without being much to the west of her port when she should lose them. Moreover, it was exactly one year since she had

passed this way before. She then crossed in 109 degrees, and had a capital run thence of 17 days to San Francisco.

"Why should she not cross here again? She saw that the 4th edition of Sailing Directions, which she had on board, did not discountenance it, and her own experience approved it. Could she have imagined that, in consequence of this difference of 40 miles in the crossing of the equator, and of the two hours time behind her competitor, she could fall into a streak of wind which would enable the *Fish* to lead her into port one whole week? Certainly it was nothing but what sailors call 'a streak of ill luck' that could have made such a difference.

"By this time *John Gilpin* had got his mettle up again. He crossed the line in 116 degrees—exactly two days after the other two—and made the glorious run of 15 days thence to the pilot grounds of San Francisco.

"Thus end the abstract logs of this exciting race and these remarkable passages.

"The *Flying Fish* beat. She made the passage in 92 days and 4 hours from port to anchor; the *Gilpin* in 93 days and 20 hours from port to pilot. The *Wild Pigeon* had 118. The *Trade Wind* followed, with 102 days, having taken fire and burned for eight hours on the way.

"The result of this race may be taken as an illustration as to how well navigators are now brought to understand the winds and currents of the sea."

And it was Maury's own work chiefly that had brought about this understanding. He finally was able to give to others the guidance that he had so much wished for when he was sailing master of the *Falmouth*.

CHAPTER XII

A RIVER IN SOUTH AMERICA

WE are continually surprised at the scope of Maury's interests and the reach of his vision. Not only was he interested in many subjects, he also seemed to seize upon those subjects that were of chief importance to mankind. In his interests and sympathies, therefore, he was a citizen of the world. In his far-reaching vision he was a prophet; and in his plans for solving great questions of general interest he was a practical statesman. We think of him chiefly as a scientist in the physical world of water and air and the heavenly bodies, but he was no less a scientist in the social world of business and government and international relations. Moreover, he was eminently practical. His theories always led him to a definite plan of action. His convictions soon found expression in word and deed. In this he was true to his French blood. He could think abstractly, but he never went far until he was speaking in concrete terms and seeking to apply great general truths to actual cases.

An instance of his public spirit and practical statesmanship is found in his Amazon River project. In this he was aiming to solve the slavery problem in the United States and at the same time to quicken industry in South America and promote commerce throughout the world.

Before going into this, it will be of interest to read what Maury wrote of the Amazon River in one of his geographies, a little book which was used widely for many years as a textbook for children in the schools. He says:

"The Amazon reminds us of our own Mississippi, only, instead of flowing from north to south, it flows from west to east. It carries more water to the sea than any other river. In some places it is so wide that a vessel sailing on it may be out of sight of land. Steamboats ascend it for 2,200 miles, almost across the continent."

He knew that the lush green forests along the Amazon were rich in rubber, drugs, and timber. He also knew that white men could not live and work in that damp, hot climate. Accordingly, he conceived a plan like this: Let Brazil make the navigation of the Amazon free to all nations and employ large numbers of Negroes in preparing the natural resources of the Amazon Valley for commerce. Negroes, he thought, would be adapted to the climate there, and free trade would attract many ships from many lands to carry away the products. All this would be of advantage not only to Brazil, but also to other countries.

One of his chief objects in this plan was to transfer the Negro slaves from our Southern States to Brazil. It was not to introduce slavery into Brazil. Brazil had Negro slavery, and was almost certain to continue to have it, he thought. It was hard to keep Brazil and other countries from carrying off new slaves from Africa. If Brazil could get her slaves from our Southern States instead of from Africa, the number here would be cut down and the steal-

ing of new slaves from Africa would be prevented. He expected the law of demand and supply to shift the slaves from our Southern States to South America, just as it had already transferred them from our Northern States to the Southern ones.

He did not believe that the slave owners would ever consent to set the slaves free without being paid for them; but he was of the opinion that the desire of the Brazilians for slaves would meet the desire of a good many of our people to dispose of their slaves at the market price; and so in time slavery here would be eliminated or much reduced.

In a letter written to a cousin, in December, 1851, Maury said:

"Now for the last two years I have been urging upon the Government to make a treaty with Brazil, and to remind her in that treaty that we are her best customers for coffee; that nearly all she produces is consumed in the United States, where it is admitted duty free, and of course the consumption is largely increased thereby. I have urged that we should say to Brazil in that treaty, Stop the African slave-trade, or we will put a duty on that coffee, and thus lessen the demand for the fruits of slave labour. . . . Brazil is a slave country, and all the travelers who go there, I am told, say that the black man, and he alone, is capable of subduing the forests there.

"To make it clear that the people of Amazonia will have slaves—they are very near to the coast of Africa, and if they cannot get them in one way they will in another. . . . Shall Amazonia be supplied with this class from the

United States or from Africa? In the former case it will be a transfer of the place of servitude, but the making of no new slaves. In the latter it will be making slaves of free men, and adding greatly to the number of slaves in the world. In the former it would be relieving our own country of the slaves, it would be hastening the time of our deliverance, and it would be putting off indefinitely the horrors of that war of races which, without an escape, is surely to come upon us. Therefore, I see in the slave territory of the Amazon the safety-valve of the Southern States."

Beginning with the famous act of Congress, effective in 1808, the United States had been trying to stop the stealing of Negroes in Africa for the purpose of selling them as slaves. Like some other pernicious traffics, the slave trade was hard to stop, because there was much money in it for persons who were willing to be law-breakers. In the same letter from which quotations are given above, Maury states that he had some years before proposed a plan for breaking up the slave trade, which plan had been approved by Lord Ashburton, a prominent Englishman, and had been adopted; and that efforts were then being made to carry it out. He says:

"You will see that my plan was adopted exactly as I proposed it, and we have now a squadron on the coast of Africa for the suppression of the slave-trade."

In January, 1853, Lieutenant Lewis Herndon made a report to Congress of his explorations in the Amazon Valley. This stimulated Maury's interest in the Amazon and confirmed his belief that its great natural resources could

be developed by a treaty between Brazil and the United States of North America. He wrote articles on the subject which were printed in Washington newspapers, signing them "Inca." He thus chose a pen name that belonged to South America and that also reminded men somewhat of some of the splendid projects that had been carried out there in former centuries. In these "Inca" papers he showed clearly that the Amazon region had rich minerals, fertile agricultural lands, and forests of untold wealth, the very things that the treaty he advocated would utilize in wide-reaching commerce.

Maury's plan for the free navigation of the Amazon was endorsed in June of the same year, 1853, by the Memphis Convention, and Congress was asked to take action. No effective steps were taken by Congress for several years, but in 1866 an agreement was signed whereby the Amazon should be free to the merchant ships of all countries as far inland as Brazil extends, which is about two thousand miles, measured along the river.

At first the people of Brazil were offended by Maury's plan regarding the Amazon. They evidently thought that he was aiming to take some unfair advantage of them. It was this suspicion on the part of the Brazilians, no doubt, that delayed the treaty. In a few years, however, they came to agree with him; and after a policy of free trade had been tested out they were grateful to him. However, his plan failed, or came too late, to prevent some of the troubles over slavery in our own country, which he feared and foresaw.

HOUSE IN FREDERICKSBURG, VIRGINIA
Maury's family lived here during the Civil War.

WHERE MAURY LIVED DURING THE CIVIL WAR

At that time the home of Robert H. Maury, 1105 East Clay Street, Richmond. The first floor windows open into the room where Maury made his initial experiments of exploding gunpowder under water.

CHAPTER XIII

PATHFINDER OF THE SEAS

Of ocean paths the tangled clue
He taught the nations to unravel,
And showed the track where safely through
The lightning-footed thought might travel.

BY 1853 Maury had won distinction in many fields. His deeds suggested various titles of honor, but the one of chief renown and the one by which he is still most widely known is "Pathfinder of the Seas." The waters, the whales, and even the winds have paths over or through the seas; tracing these, Maury found also the best paths for ships.

On the land a river now and then cuts a new channel. At first we might suppose that a river in the sea will do so more frequently, but this is probably not the case. The banks of water seem to hold a current in its channel as well as banks of clay and stone. Maury's description of ocean currents is interesting. He says:

"There are rivers in the sea. They are of such magnitude that the mightiest streams of the land are rivulets compared to them. They are either of warm or cold water, while their banks and beds are water of the opposite temperature. For thousands of miles they move through their

liquid channels unmixed with the confining waters. They are the horizontal movements called currents.

"The mariner can sometimes detect them by the different color of their stream, while, if they give no such visible sign of their existence, he can trace them by testing their temperature with his thermometer.

"There is an equatorial current sweeping from east to west all along on either side of the equator, and well nigh encircling the globe. There are polar currents setting from the polar regions toward the equator; and there are return currents setting from the equator toward the poles."

For centuries the hunting of whales has been an important industry. In 1680 the Dutch, who then supplied all Europe with whale oil, had 260 ships and about fourteen thousand men employed at the work. In the eighteenth century Great Britain took the lead in catching whales, the object being to train men to be hardy seamen as much as to gain wealth by the sale of oil and bone. During the nineteenth century the United States became the chief center of the whale fisheries. Nantucket, Massachusetts, for example, sent her whaling ships to Newfoundland, to the West Indies, to the Cape Verde Islands, and to Brazil. For years New Bedford, Massachusetts, was the greatest whaling port in the world. Thrilling achievement called to adventure and danger challenged courage.

About the year 1846, when Maury was beginning to chart the seas, there were nearly a thousand vessels of various countries engaged in whaling, and many thousands of people depended on the business for a living. Maury's whale charts showed where whales were most

frequently found, in what seasons of the year they visited certain waters, and what kind of whales might be expected here or there.

Even the roving winds may be tracked and charted. "The direction in which a wind blows," says Maury, "is so constantly changing that we often speak of the winds as fickle, inconstant, and uncertain. There is, however, order in the movements of the atmosphere. The fickle winds are obedient to laws.

"Certain of the winds blow without interruption in the same direction, and at nearly the same rate. So constant are they that vessels often sail in them for days and days without, as the sailors say, 'changing a stitch of canvas.' It was the steady blowing of these winds which so alarmed the crew of Columbus on his first voyage to America, and led them to fear that they should never get back to Europe. From their always pursuing one *trade* (path), or from their importance to navigators, these winds have been called the *trade winds* or *trades*. They are currents of air which are ceaselessly winging their flight from the polar and temperate regions toward the equator."

He then speaks of the variable winds, the calm belts, and the periodical winds. "The periodical winds are those which blow for a certain time in one direction, and then for an equal, or nearly equal time, in the opposite direction. They are the land and sea breezes and the monsoons."

The paths of the winds and the sea rivers could not be changed; but the paths of ships could be directed hither

or thither. They could utterly disregard the great currents of air and water, and taking haphazard chances be now lucky, now unlucky. They could try to oppose these tremendous natural powers—and foolishly fail; or they could trim their sails and set their courses so that, as far as possible, both winds and currents would be aids to them, speeding them on their way.

The clipper ships of those days were mountains of white canvas above the blue waves. With the wind just right they were race horses of the seas. They often had names to fit their deeds. The *Flying Cloud* ran, in 1851, from New York to San Francisco, fifteen thousand miles, in a few hours less than ninety days, making in one day about four hundred miles. Later the *Comet* made the same trip in eighty-three days. In 1854 the *Lightning* ran from Boston to Liverpool, 2,827 miles, in thirteen days, and from Melbourne to Liverpool, 12,190 miles, in sixty-four days. In 1865 the *Nightingale* sailed from Melbourne to New York, 12,720 miles, in seventy-three days.

The clippers were queens of the seas from 1840 to 1855, and many were continued in use later; but in time they were displaced by the steamers.

On his way down to Rio in the *Falmouth,* in 1831, Maury first saw the need of wind and current charts, and perhaps made up his mind to make such charts if he ever had a chance. Sixteen years later, after years more on the ocean and years of work at Washington, he published his first wind and current chart of the North Atlantic. Sending this out in large numbers, he soon began to receive in return the records of the thousand captains and

more who used it. Every ship that used his chart and answered his questions became a "floating observatory, a temple of science."

In light of the new facts thus collected he revised his chart of the North Atlantic; and as time passed he made other charts—of the South Atlantic, the North Pacific, the South Pacific, and the Indian Ocean. In 1851 President Fillmore stated in his annual message that by means of Maury's wind and current charts the passage from the Atlantic to the Pacific ports of our country had been shortened by about forty days. In 1854 the Secretary of the Navy asserted that Maury's work had promoted commerce by pointing out to the mariner new paths in the great deep where favorable winds and currents lent aid; that his charts and sailing directions, by shortening the voyages of merchant vessels, were saving millions of dollars.

The "Pathfinder" was laying thousands under tribute, but he was making the world his debtor.

Before Maury charted the best paths from the Atlantic to the Pacific, it usually took a ship about 180 days to sail from New York to San Francisco, fifteen thousand miles, around Cape Horn; but by the year 1855, after his charts had been in use for seven or eight years, the average time had been reduced to about 133 days. In 1851, as we have seen, the *Flying Cloud* made the run in slightly less than ninety days. The same year there was a famous race between the *Sea Witch,* the *Typhoon,* and the *Raven.* The *Raven* won, making the long voyage in 105 days. The year before she had made the same voyage in 97 days.

Another long voyage for the sailing ships of those days was the trip from England to Australia and New Zealand. They went down by the coasts of Spain and Portugal and the long shores of Africa, turned eastward close around the Cape of Good Hope, and then crossed the wide Indian Ocean. Homeward bound, they came back over the same route, often fighting against adverse winds. It took them about one hundred and twenty days each way. Maury proposed a new route for them. Following his directions, they made a wide circle around the Cape of Good Hope going eastward, and then instead of turning back for the homeward voyage they continued eastward, the winds strong behind them, circled the globe, and came up into the Atlantic around Cape Horn. By this new route they saved about forty-eight days on the round trip.

It is estimated that following the paths mapped out by Maury saved the merchants and shipowners of the United States over two million dollars a year, and those of Great Britain about ten millions each year. In 1853 a number of merchants and other business men of New York presented him with several fine pieces of silverware and a purse of $5,000. In 1854 Columbia University made him a Doctor of Laws. The next year a New York firm named one of their fast ships in his honor; and a few years later he received a letter of appreciation signed by 363 men in different parts of the country. In 1855 a bill was offered in Congress proposing to give him $25,000 from public funds, but this was not passed.

Races between ships bound on long voyages became a

fashion of the time. The most famous race ever run by clipper ships on or off the new sea paths took place in the fall and winter of 1852-53, as related in Chapter XI, in the words of the great "Pathfinder" himself.

On one occasion Maury proved himself a ship-finder as well as a pathfinder. In the winter of 1853-54 the *San Francisco,* a United States ship, was going from New York towards San Francisco with a regiment of soldiers on board. She fell into a terrible hurricane, and the day before Christmas, while out in the Gulf Stream, off the coast of New Jersey, she was disabled. The next day and the day following she was seen by other ships, but they were unable to help her. She was drifting at the mercy of the winds and waves. The Secretary of the Navy prepared two revenue cutters to go out to the aid of the *San Francisco,* and asked Maury to give an opinion as to the location in which she would probably be found.

Maury studied the forces, the winds and the currents, that were driving the helpless wreck; then took the red and blue pencil that he always had at hand and, with the blue end, made a cross mark on a map that lay on the table. "Just here," he said, "she will likely be found."

Before the revenue cutters reached the *San Francisco* other ships found her, and were able to save those of her passengers that had not been washed overboard; but Maury's calculations were so accurate that one of the relief ships reached almost the exact spot in the ocean where the rescue had taken place.

The best railroads have double tracks. In 1855 Maury, acting upon the suggestion of a gentleman in Boston,

mapped out a double track for steamers crossing the North Atlantic. Each of these tracks was about twenty miles wide, and Maury called them "ocean lanes." The cost of charting them was borne by New York insurance companies who saw their value in preventing accidents. To chart these lanes Maury studied the records of wind and weather in the North Atlantic covering more than forty thousand days of observation. Steamers going east were to take the southern lane, those coming west the northern one.

At once the Secretary of the Navy ordered the ships of the navy to follow Maury's lanes. They were not generally observed until about 1890, but in 1898 all of the steamship companies that ran ships across the Atlantic agreed to use them. It was clearly seen that many of the accidents which had taken place in the North Atlantic would have been avoided if the lanes had been carefully followed by all vessels.

Writing in *The Running Tide,* and also in *The Neptune Log* in the spring of 1930, Mr. Phillip Vyle, associated with marine interests, said:

Forty-six thousand Abstracts from as many skippers' Logs went into the charting of Maury's Lanes across the oceans. Amazedly you exclaim, "Lanes across the oceans? I never heard of any Lanes—what are they—who laid them out?" There are well-defined Lanes across the oceans, and ships follow them, too. Each time you take ship you traverse a Maury's Lane. A Lane for your ship to go, and a Lane for your ship to come. To promote your sea-going security, Matthew Fontaine Maury, whom you see so splendidly sculptured in characteristic studious pose by Mr. Sievers, asked the running tide for a continuous interview and then he wrote its autobiography.

CHAPTER XIV

THE CONFERENCE IN BELGIUM

MAURY depended on no one to do his work; he worked hard and shirked not; yet at the same time few men succeeded better than he did in getting other men interested in great tasks and in securing their wide co-operation. This is shown best, perhaps, in connection with his wind and current charts. He got his ideas about shorter and quicker routes for ships in his own experience. He began work upon the subject with facts that he gathered from his own observation. These facts he enlarged by means of records he found in the old log books at Washington. As he sent out his charts he asked every captain who used them to record more facts and send them in; and when a count was made forty-five years later (for the work continued long after Maury was dead), it was found that over twenty-six millions of his question blanks had been accurately filled out and returned from all parts of the world.

This was a marvelous achievement of co-operation.

The chief agency in launching this work to wide and lasting favor among the nations was a great conference that was held at the city of Brussels, in Belgium, in 1853. This conference was called at Maury's request. Aided by Honorable William A. Graham, United States Secre-

tary of the Navy, and the representatives of the various foreign countries at Washington, he induced a number of kings and other rulers to appoint their leading men of science to attend this conference. Maury himself represented the United States. On his way over he stopped in Liverpool and London and made addresses on his plans for collecting facts to aid shipping and commerce. Costs were to be reduced by improving navigation and shortening voyages.

On August 23, 1853, a company of distinguished men assembled in Brussels, at the residence of a high official in the Belgian government. Representatives were present from Belgium, France, Denmark, the Netherlands, Great Britain, Portugal, Norway, Russia, Sweden, and the United States. The Conference met day after day for seventeen days. Maury was requested to be president of the assembly. When he declined the honor, Jacques Quetelet, Director of the Royal Observatory of Belgium, was elected to preside. Upon his request Maury then made a short address, stating what he hoped the assembly might do.

The sessions of the Conference were earnestly devoted to the business suggested by Maury. A form of log book for warships was agreed upon; also one for the use of all merchant vessels whose captains were willing to co-operate in recording useful observations. It was agreed that this work was to be carried on not only in times of peace, but also in time of war, if war should break out. In case any of the vessels that had on board scientific records were captured, the records were to be kept safe.

Later the governments of Prussia, Spain, Sardinia, Chile, Austria, and Brazil, and the free cities of Hamburg and Bremen also offered to co-operate in the plans agreed upon at the Brussels Conference. The Pope provided distinctive flags to be flown at the mastheads of all those vessels from the Papal States whose masters were aiding in the new plans of research.

No wonder Maury was pleased. In speaking of the Conference he said:

"Rarely has there been such a sublime spectacle presented to the scientific world before: all nations agreeing to unite and co-operate in carrying out according to the same plan one system of philosophical research with regard to the sea. Though they may be enemies in all else, here they are friends."

It is easy to see that this Conference had great value not only to science and commerce, but also in the cause of world peace and good will. It was held only about ninety miles, in a straight line, from the city of the Hague, in Holland, where in recent years a beautiful peace palace for the nations has been built. Although Belgium, like Holland, is a small country it is, in science and art and commerce, a great world center. From the busy waters round about, ships and ideas go out to all the world.

At the close of the Brussels Conference Maury returned to his duties at the National Observatory in Washington with hightened honors and extended fame. Many learned societies in Europe and America elected him to honorary membership. Orders of knighthood were conferred upon him, and medals were struck in his honor. Humboldt,

the great German scientist, declared that Maury had founded a new science, the physical geography of the seas.

It was immediately following the Brussels Conference that the merchants of New York City made their handsome gifts to Maury, as related in Chapter XIII.

According to some authorities, Maury's Atlantic Lanes were laid out in 1853, and approved by the Brussels Conference. The following paragraph is quoted from the same issue of *The Running Tide* that is referred to on page 88:

Maury's proud moment came, when, at the Bruxelles international marine conference in 1853, it was unanimously agreed to adopt his Lanes for the Atlantic and his charts in general by which nearly all of the world's shipping was thereafter to be guided. His "Lanes for Steamers Crossing the Atlantic" was published in 1854. The Lanes shift according to the season. During September-January, Maury's Lanes are "Northern"; February, March, July and August, they are "Southern"; April-June, "Extra Southern." Between Ambrose lightship, New York, and Bishop Rock, near Plymouth, England, approximate distance, "Northern" Lane, 2,902 miles; "Southern," 2,966 miles; "Extra Southern," 3,004 miles. The division, or the "spare space," between the eastbound and westbound tracks, is about 30 miles. The present pilot charts of the North Atlantic do not carry the original Maury Lanes precisely, but what may be considered an outgrowth of them consistent with present day data and experience.

CHAPTER XV

WITH FOUR GIRLS IN EUROPE

LIEUTENANT MAURY was very strict with his children in some respects. For example, he did not permit his daughters to read novels while they were students. But he was also very sympathetic and generous, and was always on the lookout to do something for their pleasure and instruction. He did not send his children to school very much, but taught them himself. The older ones were also drafted into service to assist in teaching the younger ones.

His second daughter, Diana, later Mrs. Corbin, wrote a life of her father which was published in London in 1888. In it she says:

"I don't think I ever went to school more than three months altogether. He was my loving and tender teacher always; and when Betty and I grew to be fifteen or thereabouts we had to take care of one or two of the younger ones and teach them to read, write, and cypher, yet without allowing this duty to interfere with our own lessons or our regular tasks of sewing."

Betty was Maury's oldest daughter. Diana was known as "Nannie Curly." Maury had a pet nickname for each of his children except Betty. He said that she grew up too fast for him to fit a nickname to her.

The young teachers, Betty and "Nannie Curly," were soon given the advantages of travel by their wise and generous father. Says Mrs. Corbin ("Nannie Curly"):

"When Betty and myself were almost grown up, and he began to travel about the country to address the agricultural societies of the different States about Meteorology for the Farmers, and Crop and Weather Reports, he said, as we had been so faithful in teaching the little ones, he would take first one of us and then the other wherever he went. So we made two trips with him, and then came the Brussels Conference, to propose a uniform plan of observations at sea, and to adopt a meteorological log. He said such a chance might never occur again, and, if he could 'raise the wind,' he would take both of us that time. 'The wind' was raised somehow, and we both went, accompanied by our two cousins, Ellen Herndon and Ellen Maury."

Nowadays many young people go to Europe; but in 1853 a tour abroad for boys or girls in their teens was unusual.

Betty Maury, the scientist's oldest daughter and the oldest in this vivacious quartet, was not yet seventeen when the party sailed. Ellen Herndon was a lovely blonde, and Ellen Maury was a very handsome brunette. Mrs. Corbin (Diana Maury, alias "Nannie Curly") employs these very words in describing her cousins. Though of course she does not use any flattering terms in reference to herself or her sister Betty, we may be pretty certain that they were good matches for the cousins, in looks and manners as well as in talents and popularity.

Such a merry party, Mrs. Corbin declares, surely never sailed the broad ocean before. The voyage was longer in those days than now, and in the two weeks on the sea everybody on the steamer had a chance to get acquainted with that jolly group of girls from Old Virginia. Soon they were known from one end of the vessel to the other as the Magpie Club. Single magpies, we are told, are frequently silent, but when three or four get together they are almost certain to be frolicsome and noisy. And the plumage of magpies is usually gay and of varied colors. In how many ways the four girls resembled four magpies we cannot now be positive, but very probably they answered to the description in activity, in curiosity, and in loquacity. We can imagine how they danced all over the ship, all talking at once, and talking all the time.

After many days without sight of land, the green shores of Ireland rose out of the mists. St. George's Channel and the Irish Sea were safely passed. The lighthouses of Holyhead and the broad reaches of Anglesey were left behind. The steamer circled around the sands of Dee, entered the wide mouth of the river Mersey, and stopped at Liverpool. The Magpies stepped ashore on foreign soil; but even there they did not feel as strangers very long, for Lieutenant Maury found awaiting him there an invitation from Lord Wrottesley to come to Wolverhampton.

Lord Wrottesley, too, was a scientist, and he was president of two learned societies in England. He and Maury had probably never met before, but they were kindred spirits and had doubtless written each other letters about their work. They were friends that the wide sea had

brought together, though ordinarily it kept them three thousand miles apart; and now the Englishman was opening his home and inviting the American to enter. His hospitable invitation included the Magpies. So southward across the Mersey and the broad plains of Cheshire they went, with the bold outlines of the Welsh mountains in the distance on their right.

Wolverhampton lies among the coal mines and iron factories of Staffordshire, about sixty miles southeast of Liverpool. Wrottesley Hall, near Wolverhampton, had been known back in Cromwell's time as the Convent of White Ladies. In the beautiful park stood a great oak tree, the celebrated Royal Oak, so called because it had once sheltered a prince who later became a king. One day in September, 1651, Charles Stuart and Major Careless climbed up into the dense foliage of this oak and hid there for twenty-four hours.

A Scotch army that fought valiantly for Charles had just been defeated at Worcester by the army of Cromwell. Charles fled and hid in the tree with Careless, but it would have been very unwise if either one had been careless just then. Cromwell's "Ironsides" were scouring the country. Their eyes were keen and their swords were sharp. It really is a wonder that they did not find the young prince and his companion, dense as the autumn leaves were. Charles was then just twenty-one, and nine years later he became king of England, Scotland, Wales, and Ireland; but we may be certain that he never forgot those twenty-four hours in the tree.

It is too bad to spoil a good story, but the Royal Oak

MAURY AND HIS FAMILY IN LONDON IN 1868

Left to right, standing: Eliza Hull Maury, Admiral Jansen of the Royal Dutch Navy, Lucy Minor Maury, Mary Herndon Maury, M. F. Maury, Jr., and Nannie (Mrs. Welford Corbin). Seated: Matthew Fontaine Maury and his wife with their little granddaughter, Nannie Corbin.

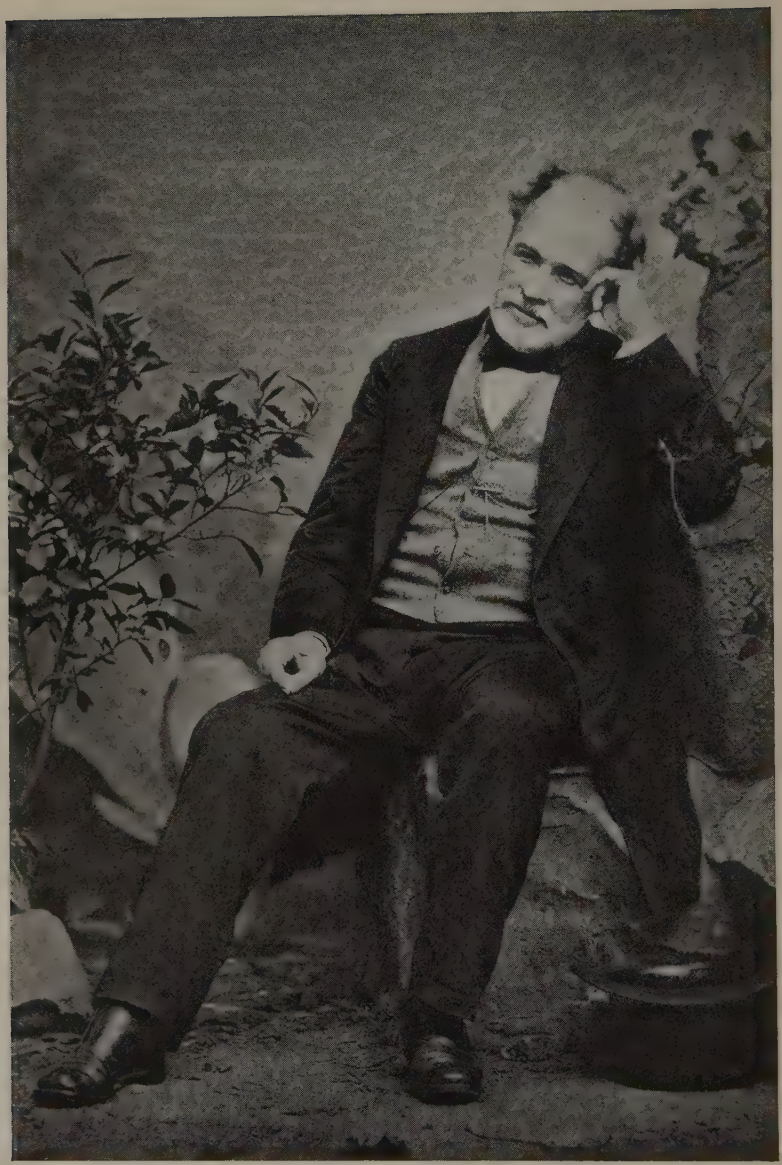


Photo by Anderson, Richmond, 1868

MATTHEW FONTAINE MAURY

that the Magpies saw and clustered around was a substitute. The one in which the prince hid in 1651 was visited after he became king by hosts of relic-hunters. One broke off a twig, another cut off a piece of bark. The limbs became shorter, the cuts deeper, till finally the sturdy oak was dead. But one man, who had a live acorn from the great tree, dug into the ground at its foot and hid the acorn in the moist earth. In time that acorn became an oak, and that was the Royal Oak that the Magpies saw in 1853. This oak, it is said, still guards the spot where the young prince hid from his enemies.

On their long trip across Europe in 1853 the Magpies, with Lieutenant Maury, visited many cities and other historic places in England, France, Holland, Belgium, and Germany. Everywhere they were received with honor and entertained with hospitality. The name of Maury had gone ahead. His achievements in the scientific world were a passport that was accepted generously and gladly. We cannot but be sorry that Mrs. Corbin in her book does not relate more particulars of that memorable tour. Even then London was a "man's town," with "power in the air"; and Paris was a "woman's town," with "flowers in her hair." No doubt they saw the gardens of Versailles, with "flashing fountains filled," and loved the German fir woods, "in green battalions drilled."

Mrs. Corbin does record the names of some of the great scientists whom they met on this tour. She says: "We were so proud to be introduced by him [Lieutenant Maury] to such men as Baron Humboldt, Erenburg, Jansen, Quetelet, Le Verrier, Lieber, Fitzroy, and others."

Fitzroy was a British naval officer and scientist, author of several important books on weather and navigation. In 1830 he went with Darwin on an expedition to South America, and from 1843 to 1845 he was governor of New Zealand. Le Verrier was an eminent French astronomer, and Quetelet was a Belgian scientist who published a number of scholarly books. Jansen was an admiral in the Netherlands navy, who for many years was a warm friend of the Maurys. In 1868 he was photographed with the Maury family in London, as shown in the recent life of Maury, by Professor Charles L. Lewis.

Lieber was probably Franz Lieber (1800-1872), a native of Berlin, but long a resident of the United States, distinguished as a teacher and writer on law and government. Erenburg was no doubt Christian G. Ehrenberg (1795-1876), a German scientist and traveler, who was a companion of Humboldt on a tour of the Ural Mountains and Central Asia. Baron Humboldt was one of the greatest travelers and nature students of modern times. He lived to be ninety years old, and his long life was rich in good works for the scientific world.

In 1855, two years after Maury had attended the Brussels Conference, he received a most cordial letter from Humboldt. In that letter the great scientist told him of a medal which Humboldt's sovereign, the king of Prussia, was sending to Maury in recognition of his valuable services to the commerce of the nations.

CHAPTER XVI

A RIVER IN THE OCEAN

A YEAR and a half after Maury returned from the great Conference in Belgium he published his most notable book. It came from the press of Harper & Brothers, New York City. On the title-page it bore the date 1855. It was dedicated to George Manning, of New York; and it was entitled *The Physical Geography of the Sea.*

It was an octavo of 274 large pages. It contained twelve plates illustrating the circulation of the atmosphere, the channel of the Gulf Stream, the path of a typical West Indian hurricane, the regions of the ocean where whales were found, etc. The book was dedicated to Mr. Manning because he had been of great assistance in the distribution of the wind and current charts.

Some of the subjects treated of in this remarkable book are "The Gulf Stream," "The Atmosphere," "Red Fogs and Sea Dust," "The Salts of the Sea," "The Equatorial Cloud Ring," "Agency of the Winds," "Depths of the Ocean," "Storms," and "Trade Routes." In the opinion of Baron Humboldt, it was one of the most charming and instructive books in the English language. In 1861 the eighth edition appeared in this country, and by that time it was a volume of 474 pages. In England the book ran through nineteen editions. It has been translated

into various languages, for example French, German, Dutch, Italian, Spanish, and Norwegian. Some of the naval schools on the continent of Europe have used it as a textbook.

The eighth American edition was dedicated to William C. Hasbrouck, of Newburgh, New York. Years before, in the backwoods of Tennessee, Mr. Hasbrouck had been one of Maury's teachers. It was he who paid Maury thirty dollars at a time when he needed it most.

At least one of the English editions was dedicated to Lord Wrottesley, whose hospitality at Wrottesley Hall in 1853 was remembered with gratitude by Maury and the Magpie Club.

Maury was the first scientist to make a careful study of the Gulf Stream, and no one has ever written of it in a more fascinating style. It is no slight art to be able to clothe truth with the garments of beauty and give it a voice of music. It is not often that young people nowadays have a chance to see a copy of this great book by Maury, which appeared first so many years ago. Extended quotations have already been given in Chapter XI, but additional passages are herein presented. These quotations, it is hoped, will enable my readers to form a definite notion of Maury's style and at the same time learn many interesting facts about important subjects in the great world of nature.

Following is a part of Maury's chapter on the Gulf Stream, from the first edition of his *Physical Geography of the Sea:*

"There is a river in the ocean. In the severest droughts

it never fails, and in the mightiest floods it never overflows. Its banks and its bottom are of cold water, while its current is of warm. The Gulf of Mexico is its fountain, and its mouth is in the Arctic Seas. It is the Gulf Stream. There is in the world no other such majestic flow of waters. Its current is more rapid than the Mississippi or the Amazon.

"Its waters, as far out from the Gulf as the Carolina coasts, are of an indigo blue. They are so distinctly marked, that their line of junction with the common seawater may be traced by the eye. Often one-half of the vessel may be perceived floating in Gulf Stream water, while the other half is in common water of the sea; so sharp is the line, and such the want of affinity between those waters, and the reluctance on the part of those of the Gulf Stream to mingle with the common water of the sea.

"What is the cause of the Gulf Stream has always puzzled philosophers. Modern investigations and examinations are beginning to throw some light upon the subject, though all is not yet clear.

"Early writers maintained that the Mississippi River was the father of the Gulf Stream. Its floods, they said, produce it; for its velocity, it was held, could be computed by the rate of the current of the river.

"Captain Livingston overturned this hypothesis by showing that the volume of water which the Mississippi River empties into the Gulf of Mexico is not equal to the one thousandth part of that which escapes from it through the Gulf Stream.

"Moreover, the water of the Gulf Stream is salt—of the Mississippi, fresh; and those philosophers forgot that just as much salt as escapes from the Gulf of Mexico through this stream must enter the Gulf through some other channel from the main ocean; for, if it did not, the Gulf of Mexico, in process of time, unless it had a salt bed at the bottom, or was fed with salt springs below—neither of which is probable—would become a fresh-water basin. . . .

"As a rule, the hottest water of the Gulf Stream is at or near the surface; and as the deep sea thermometer is sent down, it shows that these waters, though still far warmer than the water on either side at corresponding depths, gradually become less and less warm until the bottom of the current is reached. There is reason to believe that the warm waters of the Gulf Stream are nowhere permitted, in the oceanic economy, to touch the bottom of the sea. There is everywhere a cushion of cool water between them and the solid parts of the earth's crust. This arrangement is suggestive, and strikingly beautiful. One of the benign offices of the Gulf Stream is to convey heat from the Gulf of Mexico, where otherwise it would be excessive, and to disperse it in regions beyond the Atlantic for the amelioration of the climates of the British Islands and of all Western Europe. . . .

"That the Gulf Stream is roof-shaped, causing the waters on its surface to flow off to either side from the middle, we have not only circumstantial evidence to show, but observations to prove.

"Navigators, while drifting along the Gulf Stream,

have lowered a boat to try the surface current. In such cases the boat would drift either to the east or to the west, as it happened to be on one side or the other of the axis of the stream, while the vessel herself would drift along with the stream in the direction of its course; thus showing the existence of a shallow roof-current from the middle toward either edge, which would carry the boat along, but which, being superficial, does not extend deep enough to affect the drift of the vessel.

"That such is the case is also indicated by the circumstance that the sea-weed and drift-wood which are found in such large quantities along the outer edge of the Gulf Stream, are never, even with the prevalence of easterly winds, found along its inner edge, and for the simple reason that to cross the Gulf Stream, and to pass over from that side to this, they would have to drift up stream, as it were; that is, they would have to stem this roof-current until they reached the middle of the stream. We never hear of planks, or wrecks, or of any floating substance which is cast into the sea on the other side of the Gulf Stream being found along the coasts of the United States. Drift-wood, trees, and seeds from the West India Islands are said to have been cast upon the shores of Europe, but never, that I ever heard, on the Atlantic shores of this country. . . .

"In the present state of our knowledge concerning this wonderful phenomenon—for the Gulf Stream is one of the most marvelous things in the ocean—we can do little more than conjecture. But we have two causes in operation which we may safely assume are among those con-

cerned in producing the Gulf Stream. One of these is in the increased saltness of its waters after the trade-winds have been supplied with vapor from it; and the other is in the diminished quantum of salt which the Baltic and the North Sea contain. The waters of the Baltic are nearly fresh; they contain only about half as much salt as sea water does generally.

"Now here we have, on one side, the Caribbean Sea and Gulf of Mexico, with their waters of brine; on the other, the Baltic and the North Sea, with waters that are but little more than brackish. In one set of these sea basins the water is heavy; in the other it is light. Between them the ocean intervenes; but water is bound to seek and to maintain its level; and here, therefore, we unmask one of the agents concerned in causing the Gulf Stream.

"As to the temperature of the Gulf Stream, there is, in a winter's day, off Hatteras and even as high up as the Grand Banks in mid ocean, a difference between its waters and those of the ocean near by of 20 degrees, and even 30 degrees. Water, we know, expands by heat, and here the difference of temperature may more than compensate for the difference of saltness, and leave, therefore, the waters of the Gulf lighter by reason of their warmth.

"Being lighter and adhesive, they should therefore occupy a higher level than those through which they flow. . . . Hence the surface of the stream should present a double inclined plane, from which the water would be running down on either side, as from the roof of a house."

CHAPTER XVII

A TABLE FOR A CABLE

"I AM a man of few words: Maury furnished the brains, England gave the money, and I did the work."

In these words, it has often been asserted, Cryus W. Field, at a banquet, recognized Maury's part in providing the first Atlantic cable. It seems uncertain whether Mr. Field ever said this exactly, but at various times he did give Maury credit for an important share in that great project; and it is certainly true that Maury did point the way, that England supplied most of the money, and that Field, undismayed by repeated failures, carried through the work. The story is one of the most fascinating and thrilling in modern history.

There are rivers in the sea. In the sea, under the sea, there are also mountains and plateaus, as well as low plains and little hills. Between the year 1849 and the year 1853, under Maury's direction, United States naval officers and others made a great many soundings of the North Atlantic Ocean. They measured its depth at thousands of places. From these measurements Maury, towards the end of 1852, was able to draw a diagram showing what the bottom of the Atlantic between America and Europe is like. He found that the floor of the sea between Newfoundland and Ireland is fairly smooth and regular; that

it is much higher—nearer the surface of the ocean—than at other places around it; and yet that it is deep enough below the surface that iceburgs and anchors cannot scrape or strike it.

At once Maury thought of this broad elevation under the waves as a table for a cable. He called it the "Telegraphic Plateau." Morse, the inventor of the electric telegraph, and others believed that wires for carrying messages could be laid for long distances under water. Maury found the place where they could be laid across the Atlantic. He also told how the wires for ocean cables should be constructed.

In 1854 Mr. Field, then a young man of only thirty-five, and several other gentlemen formed a company to lay a cable across the Atlantic from Newfoundland to Ireland, on the natural table under the waves that Maury had discovered and charted. They asked Maury what he thought of the project. He said the plateau seemed to have been placed there especially for the purpose of holding a cable. "It is neither too deep nor too shallow," he said; "yet it is so deep that the wires, being once landed, will remain forever beyond the reach of vessels' anchors, iceburgs, and drift of any kind, and so shallow that the wires may be readily lodged upon the bottom."

He then stated that the distance between Newfoundland and Ireland is about sixteen hundred miles, and that the water on the Ireland side is not over twelve thousand feet deep, while it is shallower towards Newfoundland. This would give an average depth of water on the "Telegraphic Plateau" of something less than two miles.

This is deep water to a "land lubber," but to an ocean sounder it is not so deep. In many places the ocean is two or three miles in depth, and at some places five miles or more.

Mr. Field had first begun to correspond with Maury in 1853. Between June, 1855, and April, 1860, it is said, Maury wrote Field forty-three letters about the cable. Frequently Field came to see Maury, sometimes every day for weeks at a stretch. Maury gave him valuable suggestions about the thickness and strength of the cable, means for protecting it against wear and tear, and devices for coiling it on the ship, uncoiling it from the ship, and laying it on the floor of the sea. It was a task to try both genius and patience.

In 1854 a cable made in England was brought over to be laid across the Gulf of St. Lawrence. Forty miles of it had been paid out successfully, when a fierce gale arose and the wire had to be cut to save the ship. A year was lost. Then in England Mr. Field secured pledges for over a million dollars towards an Atlantic cable. By March, 1857, the Congress of the United States made an appropriation. On August 5 a ship, with a long new cable neatly coiled on deck, started from Ireland towards America. For six days the men worked carefully. The cable was unwound and dropped into the water. A length of 335 miles of the metal nerve that was to bind East and West together in pulsing sympathy was safely placed, and then it broke!

Mr. Field returned to England to try again. "But suppose you fail again?" said Lord Clarendon.

"I'll charge it to profit and loss, and go to work to lay another."

His lordship was so pleased with this reply that he pledged his best efforts and nobly kept his promise. Half a million dollars lay in the sea, strung along 335 miles of hidden silence; but Field's vision reached across, and his courage was strong enough to endure the breaking of more than one cable.

In June, 1858, two great ships met in mid-ocean. Each had on board a new cable. They backed up close, end to end, and stood still. The two pieces of the cable, one from one ship, one from the other, were spliced and the ships moved apart, one headed east, the other west. This cable was being laid by a double crew. It was heavier and stronger than the other, but when the ships were 111 miles apart it snapped in twain. More loss; no profit!

The two ships returned sadly to Ireland. Field went on to London and met the directors of his company. They sat as a council of war after a terrible defeat. But Field did not think of surrender. Towards the end of July the ships went out again to their mid-ocean rendezvous. On Thursday, July 29, the splice was made again, and in water 1500 fathoms deep the cable settled down. On August 5 the ship on which Mr. Field rode and watched, reached Newfoundland. About the same time the other ship reached Ireland. The proper shore connections were made at each end, and on August 16 a message was flashed through the long miles of water from Queen Victoria to President Buchanan.

This time the double crew were Argonauts. They had brought home not a golden fleece, but a copper wire that was worth more than gold. Field sought rest, but could have none. The world sought him. Religious services were held in the churches. Cannons were fired from the batteries. A new day had dawned for commerce and friendship. The lightning carried men's words through the great waters. But while the bells were pealing and the cannons booming the cable broke. Like the others, it lay silent in its ocean grave.

Seven long years went by. They were all the longer because of a terrible war that sacrificed much life and laid waste many fair harvests. But by July, 1865, Mr. Field, on the *Great Eastern,* the largest ship afloat, started from Ireland laying a new cable. A thousand miles were measured out toward the setting suns, and then, six hundred miles from Newfoundland, this cable broke. For nine days hooks were let down and the waters dragged to catch the broken end. Three times it was caught, but it could not be held. The *Great Eastern* steamed back to Britain, and another defeat was written down.

But Field never faltered. On July 13, 1866, the *Great Eastern* was ready to steam out again. On a lucky Friday she started; on another lucky Friday she touched the western shore. Mr. Field's message was brief:

"Heart's Content, July 27, 1866. We arrived here at nine o'clock this morning. All well. Thank God, the cable is laid, and is in perfect working order."

This cable held, and continued to work. To the task Field had devoted twelve years. At times he employed

six hundred men. He went to England thirty times. He laid the cable.

In the honor done to Field, and due him, other men were almost forgotten. But Peter Cooper, Lord Clarendon, Thomas Brassey, Matthew Maury, and many others should also be remembered. It took brains and money as well as courage and work; and in the final great triumph there was glory enough for all.

CHAPTER XVIII

THE STARS AND BARS

MAURY, like Julius Cæsar, was both a writer and a fighter, but he did not wish to fight with guns and swords, but rather he wished to fight ignorance with knowledge, error with truth, and wrong with right and reason. When the War Between the States broke out in 1861 he was much distressed, but he felt that he owed his first duty to Virginia, his native State; so he gave up his commission in the United States navy, left his office in Washington, and went to Richmond.

For several years he had been much worried because of the differences that were making trouble between the States of the North and those of the South. He regretted the quarrels over slavery and other matters, and feared that the great union of States might be broken up. At different times he had proposed measures that he believed would improve conditions. Early in the year 1860 he wrote letters to the governors of Pennsylvania, New Jersey, Maryland, and Delaware urging them to do what they could to bring about a better understanding between the different sections and parties, in the hope of restoring friendship. He believed that the first ordinances of secession were hasty and unwise. He did not believe that Virginia would secede for anything short of coercion—

so he declared in December, 1860; but when Virginia in the following April had to make choice, either to fight against the other Southern States or with them, and decided to fight with them, Maury also made choice. He resigned at Washington and went home to Virginia.

He wrote his resignation on April 20, 1861, probably at his well-worn desk in the National Observatory. At any rate, up to three o'clock that day he worked as hard and faithfully for Uncle Sam as he had ever done, and left the familiar halls with deep sorrow. For nineteen years the Observatory had been his workshop and Washington had been his home.

At Richmond, Maury was at once made a commodore in the Virginia navy, and soon was commissioned also by the Confederate government and put in charge of the seacoast, harbor, and river defences of the Southern States. His official rank in the Confederate navy was that of commander. In the navy a commander is next below a captain and ranks with a lieutenant-colonel in the army. A commodore is next above a captain in the navy and ranks with a brigadier-general in the army.

Leaving Washington, Mrs. Maury and her younger children went to Fredericksburg. There they were given a home by a cousin, Mr. John Minor, in a house that is still to be seen in that historic old city by the Rappahannock. To this hospitable home came also two of Maury's married daughters, Betty and "Nannie Curly," with their children. His sons, Richard and John, and his sons-in-law, Maury and Corbin, were in the Confederate army.

In 1861 or 1862, messengers came to Richmond bear-

ing two letters to Maury that must have thrilled him with pride and gratitude. Both were from Europe. There the people, small and great, who had learned to honor him for his gifts to science and commerce, heard with dismay of the terrible war in America, and were anxious to give him a home in a land of peace. Accordingly, the Grand Duke Constantine, Admiral of Russia and brother of the Czar, wrote Maury a touching letter. His was one of the two letters referred to above. The Grand Duke invited Maury to Russia. He offered him a home and all necessary means to continue his scientific pursuits.

This was not the first time that Duke Constantine had thought of Maury. In 1855 he had written him a courteous letter, expressing gratitude for his services to navigation and commerce.

It must have been a hard task for Maury to refuse the Grand Duke's generous offer. A home in the bosom of his family on the banks of the Neva, in the midst of books and surrounded by friends, appealed to him strongly. He wrote a long letter to the Duke, expressing appreciation and thanks, but he said:

"The path of duty and of honor is plain. . . . The State of Virginia gave me birth; within her borders, among many kind friends, the nearest of kin, and troops of excellent neighbors, my children are planting their vine and fig-tree. In her green bosom are the graves of my fathers; the political whirlpool from which your kind forethought sought to rescue me has already plunged her into a fierce and bloody war."

Maury felt that his duty lay in Virginia. But he hoped some time to visit Russia and thank the Grand Duke in person.

The other letter was from the emperor of France, offering Maury a home in the storied land of his ancestors. But this generous invitation was also declined.

Maury's work under the Stars and Bars, the flag of the Southern Confederacy, was notable. He drew plans for placing submarine mines in the rivers and harbors for defence against enemy ships. In July, 1861, he commanded a torpedo expedition from Sewall's Point, near Norfolk. Shortly afterwards he gave a successful demonstration of the use of torpedoes in the James River. His torpedoes were made of boiler iron plate, each loaded with a heavy charge of powder—some with seventy pounds, others with more. To each was connected electric wires, by which it was exploded.

Maury was not the first to think of electric torpedoes, but he was the first to use them successfully against an enemy in war. Other Confederate officers continued his pioneer work in this line, and by means of explosive mines, some set off by electricity, some otherwise, they destroyed many Federal ships during the war, as many as fifty or more, according to some writers. One of his torpedoes, after it had been in the water for eighteen months, was exploded under a Federal warship with deadly effect. The engine and boilers were blown fifty feet out of the vessel, the hull was shattered, and fragments of the wreck filled the air. Of a crew of 150 men, only three escaped death. Fearing such mines, the Fed-

eral warships did not attempt to come up the James River to Richmond until 1864.

Maury, as chief of harbor defences, had something to do with fitting out the famous *Merrimac* of 1862. Two ships by this name have won renown in United States history, one in the War Between the States and the other in the Spanish-American War. In 1898 Lieutenant Richmond P. Hobson, with seven men, piloted the United States collier *Merrimac* into the harbor mouth at Santiago, Cuba, under the fire of Spanish batteries, and there sank her to block up the narrow passage and pen in the Spanish fleet. In 1861, when the United States forces abandoned Norfolk Navy Yard, they blew up certain vessels that could not be removed. One was the frigate *Merrimac.* This was later raised by the Confederates, clad with iron by Maury, Captain John M. Brooke, and others, pointed with a deadly prow, armed with a few heavy guns, and renamed the *Virginia.* On March 8, 1862, she struck terror into the Federal fleet at Newport News by sinking the *Congress* and the *Cumberland,* and the next day in Hampton Roads she fought the Federal ironclad, the *Monitor,* in an epoch-making battle. After that wooden warships went out and ironclads came in.

Twenty years before, in "Scraps from the Lucky Bag," Maury had advocated big guns on small ships. Now again, in 1861 and 1862, he did the same thing. Under the pen name of "Ben Bow" he wrote articles for the Richmond *Enquirer* in which he urged that the Confederacy build a strong navy at once. He recognized, of course, the limited resources; but he thought it possible

at least to provide gunboats enough to protect the bays and chief rivers. Small ships, armed with a few big guns, he believed would be most effective. Thus again he proved himself a pioneer.

In September, 1862, the Confederate government sent Maury to England to purchase supplies and to make friends for the Confederacy. His family, who had been driven from Fredericksburg several months before by hostile armies, were left with relatives in Albemarle County—most of them. Two of his sons were in the army. Matthew Junior, his third son and next to the youngest of his children, he took with him, sailing from Charleston, South Carolina. Eight hundred miles out, the ship stopped at the Bermuda Islands, where the British officials treated Maury with great respect. A young midshipman of the Confederate navy, Morgan by name, who attended Maury, wrote many years later of their experiences.

Apropos of Maury's mission to England and the life of his family in Fredericksburg prior to his going, his daughter Mary (Mrs. J. R. Werth—"Tots") wrote many years later:

"My mother and we four younger children, who were born in Washington, lived in Cousin John Minor's house (in Fredericksburg). . . . My father lived in Richmond, but he came to Fredericksburg to see us when transportation was open and he could leave his work.

"My sisters, Mrs. Maury and Mrs. Corbin, had come to us for protection. Their husbands and my brothers were in the Confederate Army.

"The enemy was camped on the Stafford hills and their artillery frowned from every vantage point, while their flags waved and their bands played the patriotic airs so familiar to the ears of the children born and raised on a navy reservation in Washington."

Mrs. Werth goes on to state that her father, in this Fredericksburg house, surrounded by the anxious family, had read the letters from Grand Duke Constantine and Baron Stoeckle, inviting him to Russia—but he said he would not go.

"My mother," she states further, "was not in favor of the use of the submarine torpedoes—thought it barbarous to blow up men without giving them a chance to defend themselves."

Maury replied that he hoped to end war by such means.

He came again to Fredericksburg to tell the family that he had been ordered to England, and to say farewell.

"That was the last time that we were all together."

The captain of the *Herald,* the little steamer on which Maury was a passenger, had never been far away from land before. After four or five days out from Charleston he was hopelessly lost. But because he and other merchant captains were jealous towards officers of the navy he did not tell Commodore Maury or anybody else of his trouble, but continued to steam slowly this way and that, groping for the Bermudas. On the sixth day, however, he went to Maury and told him that something terrible must have happened; that he had sailed his ship right over the spot where the Bermudas ought to be—and they were not there!

Maury told him that he could do nothing to help him before ten o'clock that night, and advised him to slow down. At ten o'clock Maury went up on deck and took bearings from the stars, at times lying flat on his back, holding the sextant above his eyes. When he had finished his calculations he gave the captain a course and told him that by steaming on it at a certain speed he would see the light at Port Hamilton, on the Bermudas, at two o'clock the next morning.

Nobody went to bed except Maury and Matthew Junior, who was then about twelve years old. All others on the ship were too anxious to sleep. Two o'clock came, but no light was seen. Five minutes passed, and still no light. Some of those who did not have much confidence in the abilities of naval officers began to grumble and to assert that there was "too much science aboard." But at exactly ten minutes past two the masthead lookout shouted, "Light ho!" Maury had again proved himself a pathfinder.

Morgan says, "Commodore Maury was a deeply religious man. He had been lame for many years of his life, but no one ever heard him complain. Although he had been many years in the navy, he scarcely ever put his foot on board of a ship without being seasick, and through it all he never allowed it to interfere with his duty. He was the only man I ever saw who could be seasick and amiable at the same time; while suffering from nausea, he could actually joke!"

Morgan continues:

"Not knowing of his world-wide celebrity, I was sur-

prised to see the deference paid him by foreigners. We had no sooner settled ourselves at the Bermuda hotel than the Governor sent an aide to tell 'Lieutenant' Maury that he would be pleased to receive him in his private capacity at the Government House. In Europe the Commodore was known only as 'the great Lieutenant Maury'."

After more than two weeks in the Bermudas the Maurys and Morgan went on a British ship to Halifax, Nova Scotia, where they narrowly escaped a wreck in the fog. There, too, Maury was accorded much honor. From Halifax Maury and his companions went on to Liverpool by the Cunard steamer *Arabia.*

In England Maury purchased materials for torpedoes to be used in defending the rivers and harbors of the Southern States. He wrote letters for the London *Times* and other newspapers, and talked with men of influence in the effort to win friends and support for the Confederate government. He purchased also several swift steamers that were used in the Confederate service to cripple the commerce of the Federal government on the high seas. For over two years, from the autumn of 1862 till the spring of 1865, Maury continued his sojourn in England and other parts of the British Isles. Most of his time and labor was devoted to the cause of the Confederacy, but at the same time he was able to do some other work of importance. For example, in 1864 he had published in London a book on physical geography. It was intended to be a textbook for schools and a manual of information for readers in general. It was translated into Dutch, French, and Russian.

About the middle of May, 1865, Maury reached St. Thomas in the West Indies. He was bringing home with him a collection of materials for torpedoes. Even though General Lee and some other Confederate generals had surrendered, Maury still thought it might be possible to hold some of the Southern ports. But at Havana a few days later, when he learned that Virginia had laid down her arms, he wrote a letter of surrender to the United States naval commander in the Gulf of Mexico, saying, "In peace as in war I follow the fortunes of my native old State."

He held himself as a prisoner of war, asking the same terms as those granted to General Lee and his officers.

CHAPTER XIX

IN THE LAND OF TOMORROW

WHEN Maury wrote his letter of surrender he probably did not know that men who had served the Confederacy abroad were excluded from pardon by recent proclamations. His friends, however, knew of this, and were all of the opinion that it would be unsafe for him at that time to return to the United States. Among those who expressed this opinion were General Lee and Mr. Charles Francis Adams. Mr. Adams was United States Minister to England. But before the messages of his friends reached him he had accepted an invitation to live and work in Mexico.

At that time Maximilian, an Austrian archduke, supported by Napoleon III, the French emperor, was emperor of Mexico. Several years before, when Maximilian was commander-in-chief of the Austrian navy, he had used Maury's charts and sailing directions, and had been influential in securing for Maury the Austrian gold medal of arts and sciences. In 1865 he was an ambitious young ruler of thirty-three, anxious to promote the welfare of Mexico, though a foreigner and usurper there; and he looked to Maury, experienced man of science, as able to help him. He made him Imperial Commissioner of Colonization, and Director of the Astronomical Observatory.

Maury entered upon his work as commissioner of colonization with keen interest and fair hopes. He was of the opinion that many Virginians and others, of necessity or of choice, would leave the States; and be believed that Mexico would be a good land for them to live in. He was hoping to be of much service in getting them settled happily in the "Land of Tomorrow."

Maximilian offered generous terms to all comers. Mexico had much rich land, but not many people. The ports were opened to the immigrants of all nations. The emperor's agents were to receive settlers and help them to get a good start. All their domestic animals and working tools were to be admitted free, and their land was to be exempt from taxes for the first year. Freedom of worship was promised, and no man was to be compelled to serve in the army until after a residence of five years.

Maury was treated most cordially by the emperor and his wife, Carlotta. A number of men who had been officers in the Confederate army went to Mexico and purchased land under Maury's guidance. Among them was his son, Colonel Richard Maury, who secured 640 acres. He also prepared to assist his father as commissioner of colonization, and to take charge of his office if he should be absent from Mexico. Near Cordoba, in the State of Vera Cruz, a colony named Carlotta, in honor of the empress, was planted. Of it Maury wrote with enthusiasm and in his usual graphic style:

"In the olden times Cordoba was the garden spot of New Spain. There stands on one side, and but a little way off, the peak of Orizaba, with its cap of everlasting snow,

and on the other the sea in full view. . . . The railway hence to Vera Cruz passes right through them; and I am now selling these lands to immigrants, as fast as they can be surveyed, at $1.00 the acre on five years' credit. . . . By the time these lands are paid for they will be worth, even if no more settlers come to the Empire, $20, $30, or even $100 the acre, for they produce everything under the sun, and yield perpetual harvests."

But Maury's term of service in Mexico, by three months, fell short of a year. Most men and women of the Southern States, though in poverty and defeat, resolved to begin again at home. General Lee said, "I still look with delight upon the mountains of my native state. . . . I look forward to better days."

Commodore Jansen, of the Dutch navy, wrote to Maury and other Confederates as follows:

"Don't emigrate! Stand by your country with stern courage; learn the patience to bear without shame and with all the dignity of self-command. . . . I don't think that you can return now to Virginia; but in three or four years great changes will take place in opinions. . . . You ought to go back to your dear state as soon as you can do so safely."

Mrs. Maury did not wish to go to Mexico. She preferred to remain in Virginia, but she did agree after a while to go to England. Early in 1866 Maximilian gave Maury permission to leave Mexico for England, where he planned to meet his family.

There were two conditions in Mexico that stood much in the way of success in colonization. In the first place,

the Mexican government did not seem ready or able to carry out its promises. In the second place, and this was even more serious, there were signs that Maximilian and his government might be overthrown. Nobody could tell what might follow.

Maury sailed away from Vera Cruz, bound for England, in March, 1866. He departed with the cordial good wishes of the emperor, who was hoping that he would soon return with his family. The empress, too, sent him a message of good will and good wishes.

Maury lived and worked in Mexico only a short time—less than a year, as we have seen. He did not return. The colonization project in which he was so much interested was soon given up; yet he conferred upon that country one great and lasting benefit. Fittingly, it was in the field of science and healing art. He introduced the cinchona tree, from which quinine is made. Of this notable service Professor Charles L. Lewis speaks as follows:

"In the matter of cinchona cultivation, Maury left a lasting blessing to Mexico. Before leaving England in 1865, he had discussed the possibility of the introduction of this febrifuge-yielding tree into certain mountainous districts of Mexico, with Mr. Clements Markham, who had established the cinchona plantations in India and was then in charge of all matters relating to them in the India Office. The feasibility of such an introduction of the plant having been agreed to, Maury on his return to England secured three packets of seeds from Markham, which were sent to Mexico, and from them successful plantations were established near Cordoba and in other sec-

tions of the country. Thus Maury left a living monument to himself in the country of his adoption and short residence."

Mexico has been called the "Land of Tomorrow" because of the laziness of many of its people in putting off their tasks from one day to the next; but gifts like Maury's, that promote health and vigor, tend to make it a land of tomorrow in another sense—the land of a promising future.

CHAPTER XX

IN ENGLAND AGAIN

"THIS is not my papa! This is an old man with a white beard!"

It was "Sat Sing" who spoke. She and "Glum" and "Tots" and their mother had left Virginia, had crossed the Atlantic, and were waiting in London. Maury came from Mexico, and the reunited family took a house at No. 30 Harley Street. This was at the end of March, 1866. The three years and a half since Maury had left Virginia had been full of change. Not only full of change, but also full of tragedy. No wonder the children did not know their father.

Tragedy had touched the world. War had desolated fair lands in North America and in South America, and the shadows of approaching wars were darkening Europe and the "Land of Tomorrow."

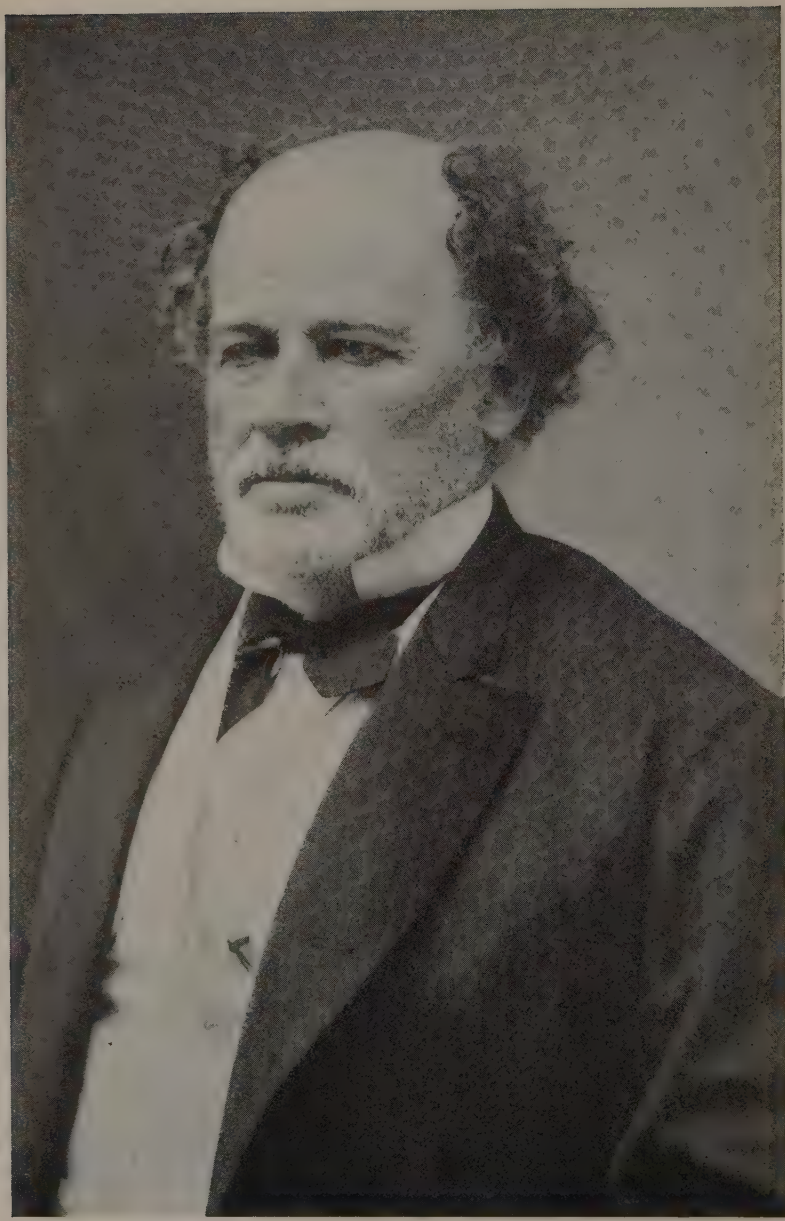
Tragedy had touched Maury and his family. Perhaps his return to England at this time brought it fresh upon him again, for it was in England, in the spring of 1863, that news had reached him of the strange disappearance of "Davy Jones." Tragedy in that case came veiled in mystery—a mystery that has never been solved even unto this day. Of it Maury later made the following entry in the family Bible:

"Our noble son, John Herndon, went out from Vicksburg, Mississippi, alive, on the 27th day of January, 1863, to reconnoiter the enemy. A few hours afterwards his horse was seen without a rider, but nothing was ever heard of him. From the footprints and other signs and marks on the levee, it is supposed that he was surprised by a scouting party of the enemy in ambush within our lines and done to death. Comely in person, lovely in disposition, generous and brave, he loved right and hated wrong. Precious in the eyes of his parents, he was very dear to our hearts."

Two years were spent in England this time, with the younger children in school and Maury at work. The family was reunited, but not the complete circle. In 1868, shortly before their return to Virginia, a photograph of the family group was made in London, but only five of the children were present. These were "Nannie Curly" (Mrs. Corbin), "Tots" (later Mrs. J. R. Werth), "Glum" (Eliza Hull Maury), "Brave" (Matthew Fontaine Maury, Jr.), and "Sat Sing" (Lucy Minor Maury).

In the group of course were Commodore Maury and Mrs. Maury; and seated on the Commodore's lap was his little granddaughter, Nannie Maury Corbin. In the picture also was Admiral Jansen, of the Netherlands navy, a dear friend of the Maurys. But three of the family were absent: Betty (Mrs. W. A. Maury), Colonel Richard L. Maury, who had remained at his father's post in Mexico, and "Davy Jones" (John Herndon Maury), who had so mysteriously disappeared at Vicksburg five years before.

Shortly after Maury reached London, in the spring of



MATTHEW FONTAINE MAURY AT LEXINGTON
This photograph was taken shortly before his death.

United States by the Civil War, and the money he had earned in Mexico by the failure of a bank, he might have lived on "Easy Street"; but as it was he doubtless had immediate need for all his income. Bringing his family to England and keeping them there cost a large sum. But his long service to science and commerce was not forgotten, and generous friends rose up around him in his day of need.

Ever since his residence in England during the years 1862 to 1865, a number of gentlemen there had been at work collecting a gift of money for him. One of them traveled through Sweden, Denmark, and Russia on behalf of this fund. The Grand Duke Constantine, of Russia, gave nearly $5,000. The government of Holland gave over $5,000. Many naval officers, scientists, and public-spirited men of England and other countries made contributions. By June, 1866, the fund had reached a total of about $15,000, and it was presented to Maury in London at a splendid banquet at which many distinguished men, representing seven or eight different countries, were present.

Evidently the bread he had cast upon the waters was coming back to him.

The next month after the great banquet Maury was engaged by a publishing firm of New York City, Messrs. Richardson and Company, to write a series of geographies for use in the public schools. Five books in all were to make up the series as planned, and two of them were written before he left England, his son "Brave" helping by drawing the maps. These books were so well written

that they at once became popular, and the money derived from them was an important source of income to Maury and his family for many years.

More particular information concerning some of these books will be given in Chapter XXV.

As time passed and the bitter feelings of the war subsided, Maury's friends in the United States felt that it would be safe for him to return to his native land. He and his family were anxious to return. Various institutions of learning offered him positions. The University of the South, at Sewanee, Tennessee, proposed to make him vice-chancellor. In February, 1867, he was tendered a chair in the Virginia Military Institute, at Lexington, "The West Point of the South." Some persons of influence wished to make him professor of astronomy at the University of Virginia.

In April, 1868, he accepted the chair at Lexington. He became professor of physics at Virginia Military Institute and director of a physical survey of Virginia, at a salary of $2,000 a year. Three years earlier General Robert E. Lee had accepted the presidency of Washington College, a neighboring institution, located on the same hill at Lexington, at a salary of $1,500 a year.

The long war had impoverished institutions as well as individuals.

On July 1, 1868, Maury and his family set sail from Liverpool, homeward bound, and after fifteen more days on the ship they landed at New York.

Shortly before Maury left England he was invited to Cambridge University, where the degree of Doctor of

Laws was conferred upon him. This was an honor well deserved and no doubt highly appreciated; but in all probability the keenest thrill of pride that came to him as he watched the blue waves on the homeward voyage arose from the knowledge that through the depths below him ran a live copper cable, flashing messages between the Old World and the New, and the consciousness that his researches had encouraged men to lay the cable. One of the last happy acts of the unhappy Maximilian in Mexico had been the decorating of Maury for his part in this great enterprise.

The thing above all others that made Maury a great man was his ability to see the invisible. He was a seer. He saw the cable before it was laid. He saw a railroad across the continent before it was built. He saw a ship canal from the Mississippi to the Great Lakes before it was dug. He saw the free navigation of the Amazon River before it was free. He saw a great training school for our naval officers, a weather bureau and weather reports for our farmers, long before either was a reality. He saw a ship canal across the Isthmus of Panama more than half a century before it was constructed. He was a seer and a pathfinder not only on the seas, but under the seas, across the lands, and among the stars.

CHAPTER XXI

THE MAN MAURY

IN FIGURE, Maury was a stout man, only about five feet six inches in height. His complexion was fresh and ruddy, his hair brown and curling, his eyes clear blue. His massive head sat on a strong neck above broad, square shoulders. His chest was deep and full, his arms long and strong. His hands were small and well formed, and he used them in graceful gestures when talking. In this his French ancestry seemed to be in evidence. In early manhood his hair was abundant, but it became thin before he reached middle age, and before he was sixty years old he was bald.

One of his daughters said, "When I can first remember him he walked with a limp, although without a cane, and his locks had become few."

His conversation was entertaining, and was enjoyed by all who ever met him. He was always polite; and in his conversation he could be expected to present ideas of great interest and value. John C. Calhoun, the eminent statesman, said of him, "He was a man of great thoughts." He was a hard worker. For example, in 1843, soon after he entered upon his duties at Washington, he often would work from nine or ten o'clock in the morning until one or two at night, although he was aware that such habits

were bad for his health. As a rule, when he was not talking with some one he was either writing or walking up and down the room (or deck, if on board ship), studying deeply on some problem for the public welfare. He frequently had callers and visitors, and enjoyed having them. Many of his guests were men of distinction, but he was no less courteous to those of no reputation than he was to the most eminent. He especially delighted in the company of young people, and his humor and gentle sympathy were very pleasing to them.

It is a remarkable fact that Maury, however busy he was, never seemed annoyed by the interruptions of visitors or the noise of his children. In the midst of his most intense studies, he would lay down his pen and join in the laugh at a good joke, and seemed quite willing for the fun to go on. However, if scandal or mere gossip were introduced he would soon show his disapproval. His greatest books were written in his parlor, while he was surrounded by his family.

Says one of his daughters:

"He never had a study, or anything like a sanctum, where his wife and children could not come, preferring to work in the midst of them wherever they congregated. He would sit at the round marble-topped centre table, with his papers spread out, the bright light falling on his bald head and shining on his brown curls, while he sat unconscious of what was going on around him; whether it was music, or dancing, or reading aloud, or romping, he would write away, or read what he had written, or talk to himself and shake his head."

Often his older daughters would write for him, and sometimes he would dictate to two of them at once, while one of the little girls would balance herself on the rounds of his chair and curl his back hair over his pencil, which she played with while he was not using it. He always used a pencil that was red at one end and blue at the other.

There were eight children in the Maury home, three boys and five girls. For each one of them, except the oldest, their father had a more or less playful nickname, as already stated. His wife, too, was fairly included in this circle of affectionate names. She was his "gentle Nannie." Diana, the second daughter, was "Nannie Curly." We have met her in the Magpie Club and elsewhere. Richard, who was later a colonel in the Confederate army, was "Goggen." John, who also later became an officer in the Confederate service, was "Davy Jones."

Just why this boy (or any boy) should have been given this name, even in fun, is rather hard to understand. "Davy Jones" is, in the parlance of sailors, the genius of the sea, but usually an evil genius; and "Davy Jones's Locker" always means a place of death under the waves. It was a tragic coincidence that "Davy Jones" (John Maury) was mysteriously lost in the fighting around Vicksburg in 1863 as completely as if he had been swallowed up in the sea.

Mary, the third daughter and the fifth child, was known as "Tots." She married Mr. James R. Werth, of Richmond, living in that city until November, 1928, when she died at the advanced age of eighty-four. Eliza

was dubbed "Glum," probably because of her sprightliness; for in her picture, made in London in 1868, she does not look at all glum. Matthew Junior was "Brave," and Lucy, the baby of the family, was "Sat Sing" (that thing!).

"Betty," the name of the oldest child in the family, sounds a good deal like a nickname, but it apparently was not so regarded by her father. With it, however, she had to be content, for the whimsical reason already noted, that she grew up so fast he was unable to fit a nickname to her, or because of some other reason unknown or not stated. Maury, in speaking to his children, nearly always used the nicknames. When he called one of them by a baptismal name the boy or girl was unhappy. It was a sure sign that the father was displeased. He made loving companions of his children, but his word was law, and no one presumed to make light of his frown.

Sometimes the great man would walk up and down the two parlors wrapped in a Japanese dressing gown, made of light-blue silk, quilted with eider down—a present from Captain Jansen; the long ribbons, which should have been tied around his waist, trailing behind him. At such a time one of the little children, playing driver, would gather up the ribbons, hold them like check lines on a horse, and trot here and there after him, calling out, "Gee! Whoa! Back, sir!" and other terms in keeping with the game. At the same time Maury might be gravely dictating to a writer, paying not the slightest attention to the child tugging at his gown strings.

He would frequently assert that he was the youngest

of the family except the baby. When dressing in the morning he would seat the little one, perhaps two years old, on the top of the bureau to hold the soap while he was shaving. The other children would stand around, one to hold the razor, one the lather brush, one the towel, and one or two the bits of paper on which to wipe the razor. All would watch the pile of lather as it grew larger and larger in the shaving can, and take great pride in the importance of the occasion. He brushed his bald head with two big brushes at the same time, gravely saying to the wide-eyed youngsters, "You see, if I use only one at a time it will turn me round and round like one oar to a boat."

At sea and elsewhere Maury had learned various amusing songs. These he would now and then sing to his children. One of the favorites, it is said, was the following:

CAMPTOWN RACES

The Camptown ladies sing this song,
Duda, duda;
The Camptown races five miles long,
Duda, duda, day.

Chorus

I'm bound to run all night,
I'm bound to run all day;
I'll bet my money on the bobtailed nag—
Anybody bet on the bay?

There were many stanzas in this gay rigamarole. In one occurred the following lines:

The blind hoss stickin' in the big mudhole—
Couldn't touch bottom with a ten-foot pole;
De sorrel hoss am got a cough,
De rider's drunk in de ole hayloff.

In the days of sailing ships this song was appropriately modified and sung as a chantey by the sailors when heaving up the anchor. The leader had to have a good memory to lead through all of the stanzas, or else he needed to be good at improvising, for it took many revolutions of the capstan to haul up thirty or forty fathoms of chain cable, with the heavy anchor dangling at the end.

When the sailors used this song they had a chorus like this:

Blow, boys, blow
For Californio,
There's plenty of gold
As I've been told
On the bank of Sacramento.

It is very probable that Maury, in singing with his children, sometimes used the sailors' version of this old song.

As we have seen, Maury did not send his children to school much, but taught them himself at home. His manner of doing this was interesting and somewhat unusual, and is described by "Nannie Curly" in the following words:

"He taught us our lessons at the breakfast table, and for an hour or so after, his plan being to bid us—my sister Betty and myself—one at a time, 'tell him about the lesson.' He seldom asked us questions on it, unless we found

a difficulty in expressing ourselves, and he never asked those put down in the book. After both had had our say, he would, taking the lesson for a text, deliver the most delightful lectures.

"He prescribed no set time for our preparation of these lessons; but we were required to master them thoroughly, and give the substance to him clothed in our own words and not in those of the book. He always expected and required that we should not prepare them at night, but should then come into the parlour to receive and entertain and be entertained by the distinguished men and women who frequently gathered round him. He considered this a most important part of our education."

The Maury children were taught their Bible lessons and the catechism by their mother. She and their Aunt Eliza, who was very skilful with the needle, gave them regular tasks in mending and darning. The family seldom went to church more than once on a Sunday while they lived in Washington, the distance to the church (St. John's, of which Rev. Dr. Pynes was rector) being considerable; but Maury himself would gather the family together for the evening service, which they would read verse about. If any visitors were present they also usually took part in the reading.

It has been observed in a preceding chapter that Maury did not permit his daughters to read novels while they were students. However, he evidently thought that some works of fiction had an educational value. For example, he himself read aloud to them Scott's novels. He also read to them Shakespeare's plays, with the verses of many of

the British poets, particularly those of Scott, Wordsworth, and Mrs. Hemans. He was very fond of the writings of these authors.

Often he would take the "whole tribe" out for long walks. Sometimes they would make an excursion to gather fruit or nuts, and in the autumn of the year they would go out and collect great clusters of the frost-tinted leaves—red and gold on the green. To reach and pull down those that were too high for the hand, Maury would make what he called a "Tennessee arm." This was a long pole with a crotch at the end. By means of it he would reach up, catch the twig desired, and twist it off, the children standing here and there below to seize it or to land it in their outspread little pinafores as it came down.

Evidently, therefore, Maury possessed an unusual variety and range of gifts and qualities. He was witty and keen, yet gentle and sympathetic. He could be stern, yet he was courteous to all and especially companionable with young people and children. He was continually dealing with world problems, yet he always had time for the small details of everyday life.

One of the most remarkable statements ever made concerning any man was the one made by James M. Morgan about Maury, that he could be seasick and amiable at the same time.

CHAPTER XXII

HOME AND NATIVE LAND

AFTER his return to Virginia in August, 1868, Maury spent a month or so at the White Sulphur Springs, in Greenbrier County, as a guest of the hotel managers. The treatment accorded him in New York City the preceding month had been so kind as to surprise him. The citizens of Richmond and other parts of Virginia gave him a most cordial reception. His coming home to share the lot of his own people, who were broken in fortune, instead of accepting honors and wealth in France or some other foreign country, was looked upon as high patriotism.

On the 10th of September, 1868, he was installed at Virginia Military Institute, Lexington, as professor of physics and superintendent of the physical survey of Virginia. The faculty of Washington College, including General Robert E. Lee, were guests at the exercises, together with other distinguished persons. Maury made the chief address of the day, setting forth in his charming manner many interesting facts in science and every-day life. In honor of the occasion he wore the various foreign decorations which had been conferred upon him. The students of the Institute were much pleased with his lucid address and his shining decorations, and almost wore out their throats cheering him.

During the autumn and winter, with his family living in Richmond, Maury was busily engaged in lecturing. At the same time he was directing a physical survey of Virginia, locating and making known the minerals, forests, soils, water power, and pointing out its unusual commercial advantages. He also did all he could to work up interest in establishing a school of agriculture. He thought that such a school could be operated to advantage in connection with Virginia Military Institute. In 1872 the State, with assistance from the United States government, did open an agricultural and mechanical college at Blacksburg. This school has grown rapidly in recent years, and is generally spoken of as Virginia Polytechnic Institute. In familiar speech it is termed V. P. I., just as the military institute at Lexington is almost invariably referred to as V. M. I.

In December, 1868, Maury published his first report on the physical survey of Virginia, an octavo volume of ninety pages. In this he set forth many valuable facts on the climate, soil, and products of the State, showing her fine opportunities in mining, manufacturing, agriculture, and commerce. As a result of his findings and showings, many enterprising men in Virginia and other States began to build more railroads and engage in various kinds of business that the State and the country at large needed.

Maury naturally looked across the waters, and did much in getting lines of steamers running directly between Virginia and Europe. By means of a large colored map and otherwise, he pointed out the advantages of a ship line direct from Norfolk to Flushing. To feed the commerce

of the eastern coast of the United States, he indicated the best routes for railroads across the continent from the Pacific and Rocky Mountain States.

At the same time that Maury was looking far to the East and far to the West, and was dealing in his masterly way with great international problems, he was on the alert to render service in other ways that were small and quiet. For example, he secured cinchona seeds from friends in England and distributed them to various persons in our Southern States, hoping that cinchona trees might be grown there as well as in Mexico, thus to make the supply of quinine larger and cheaper for the healing of the sick.

In October, 1868, he delivered a notable address at the Staunton fair. Among the matters of importance that he urged upon the people of the country on that occasion, and at other times, were the building of good roads and the fuller use of their great natural resources in water power.

In June, 1869, the Maurys left Richmond and moved to Lexington. The house which had been prepared for them was then ready, and they took much pleasure in occupying it and fixing up the different rooms. To a friend in England Maury wrote as follows:

"Here we are in our new home, busy fixing up; and things begin to know their places. So we also begin to have a home feeling. People are very kind, the country is beautiful, the views and the scenery lovely, and both climate and air such that exercise is enjoyment. . . . Nannie and her two children are now on their way to us—

by sea—from New York. Dick has gone to West Virginia. Brave is polishing off at the Institute."

The historic town of Lexington clusters over its hills on the right (southwest) bank of North River, a branch of the James. In plain view eastward are the rolling crests of the Blue Ridge, while to the west and northwest House Mountain, Jump Mountain, and other bold summits of the Alleghanies rise grandly against the skies. The farm lands and blue-grass pastures of Rockbridge County surround Lexington, the county seat, with a pleasing alternation of hill and vale. Fourteen miles southwest of Lexington is the great stone arch of the Natural Bridge, from which the county takes its name. Eighteen miles northeast is the old home of Cyrus McCormick, inventor of the reaper. Nearer Lexington is the birthplace of Sam Houston, liberator and first president of Texas; and in or near the town is the old home of "Big-Foot Wallace," another man whose name is high on the roll of honor in the Lone Star State.

Both Maury and General Lee found Lexington a pleasant home. The cultured associations of the town were congenial, and they also found much recreation and delight in taking long rides, on horseback or by stagecoach, through the surrounding country.

At the northeast side of Lexington, on a bluff that rises abruptly from the river, stand the battlemented walls of the Institute buildings. Most of them were destroyed by fire during the Civil War, but they have gradually been restored and new structures have been added. As one approaches Lexington from almost any direction, his

eye is first attracted by the turrets of Virginia Military Institute, with their flags waving above the treetops. "West Point of the South" is a name that has often been applied to Virginia Military Institute.

Already, in 1868 and 1869, Claude Crozet and Stonewall Jackson were names to conjure with. Both had lived and worked at Virginia Military Institute. And John Mercer Brooke was there in flesh and blood. He was professor of physics and astronomy. He and Maury doubtless talked over frequently their former associations at the National Observatory in Washington, the hard problems in deep-sea sounding that they had solved together, and the terrible iron monster they had sent forth seven years before when the *Merrimac* was fashiond into the *Virginia.*

Maury's coming to Virginia Military Institute in 1868 must have thrilled that school with pride and hope much as General Lee's coming to Washington College three years earlier had stirred that institution. In the library of Virginia Military Institute today may be seen a small pencil sketch, beautifully executed, showing the faculty of those days in session, with Maury, easily recognizable, in a place of honor near the front.

Washington College, now Washington and Lee University, is adjacent to Virginia Military Institute, occupying a part of the same broad-topped hill.

On July 2, 1869, Maury delivered the annual address at Virginia Military Institute, before the graduating class. He told the boys that they had not finished their education, but had merely laid the foundation. He urged each

MAURY MONUMENT IN GOSHEN PASS

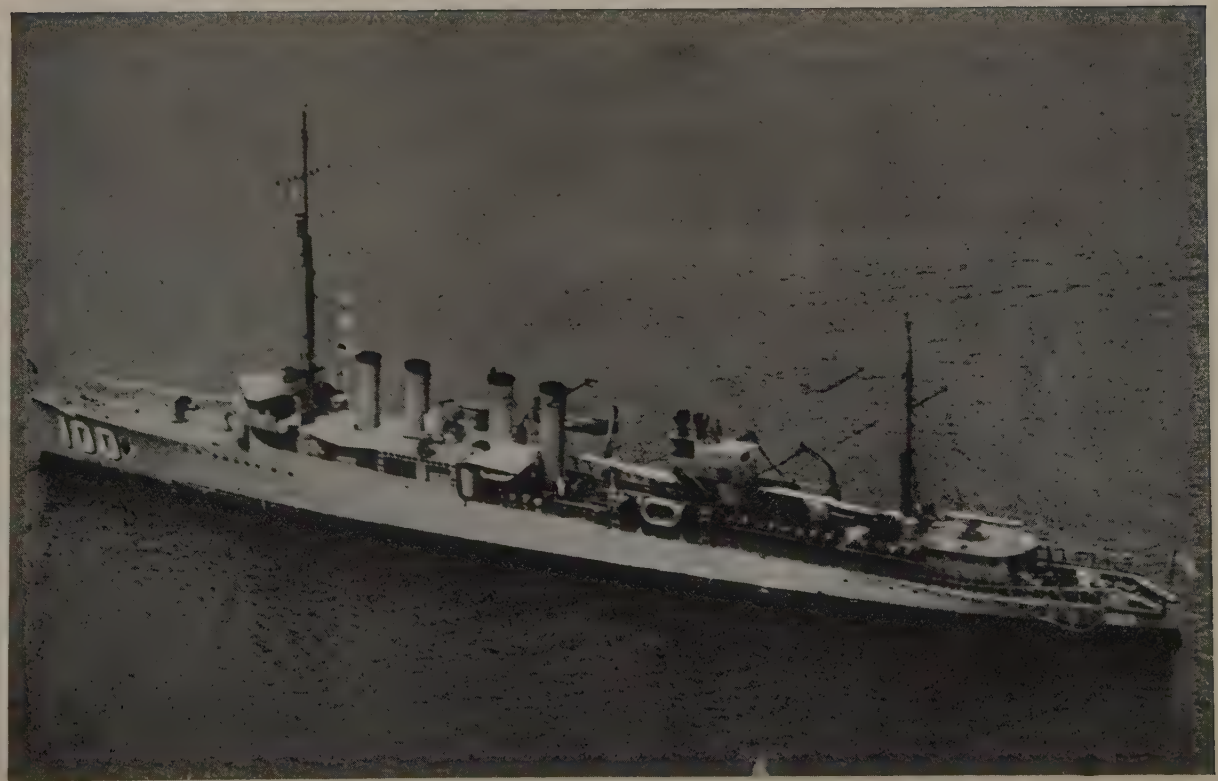


Photo by U. S. Navy Department

THE U.S.S. MINE LAYING DESTROYER MAURY

one to continue studying and working until he was a master in his special field, but to avoid mental ruts. He advised them to keep their eyes on nature, so as not to lose sight of God.

Towards the end of the year he made an address before the Educational Society of Virginia, in which he pointed out the need for a more thorough study of natural science in the schools. In this address he also expressed the opinion that the careful study of nature (science rightly taught and understood) would lead men to God rather than away from Him.

It was in this year (1869) that a bust of Maury, by Valentine, the eminent Virginia sculptor, was made. A replica of this bust may be seen today in the State Library at Richmond. Dr. H. R. McIlwaine, State librarian, says that the original is in the Valentine Museum in Richmond.

In 1870 Maury was offered the presidency of St. John's College, Annapolis, Maryland, at a salary of $3,000 and living accommodations (residence) for his family, but he did not accept the position. He perhaps might have done so if he had not feared the winters of that latitude. He had come to the conclusion that even in Virginia the winters were too severe for him. A portion of the next winter was spent at various places in Georgia, Alabama, Mississippi, and Louisiana. A sister of his, Mrs. Holland, lived at Holly Springs, Mississippi, and he was her guest during a part of this sojourn in the South.

On January 23, 1871, he delivered a lecture at Virginia Military Institute on "Man's Power-Giving Knowledge."

With him this was a favorite theme. In nature he saw power and harmony everywhere, and he believed that man should learn to know nature so well as to be able to work hand in hand with her.

About this time or shortly thereafter, Maury was offered the presidency of the University of Alabama, at a salary of $3,500 and a home for his family. So anxious were the board of trustees to have him as head of the institution that they later agreed to raise the salary to $5,000. This proposition interested him very much. He enjoyed life and work at Lexington, but felt that lack of funds was holding him back in the physical survey, as it doubtless was doing. Salaries were still small, and State moneys for State schools were at a low ebb. Besides, as we have seen, the aging man was beginning to shiver at the approach of winter. The "Sunny South" appealed to him. Accordingly, in May he tendered his resignation at Virginia Military Institute, to take effect in September; and in July he sent a message to the University of Alabama stating that he would accept the offer there.

But so many voices were raised in Virginia, from that of the governor down, asking him to stay, that he hesitated. Then it appeared to him that the plans for supporting the University of Alabama were not satisfactory, and not as they had been represented to him, so he resigned at Tuscaloosa and remained at Lexington. Positions in several other institutions were known to be open to him at this time, but he did not consider them favorably.

Maury frequently lectured to the students of Virginia Military Institute, but gave no regular courses of instruc-

tion there. His title was Professor of Physics, and he was superintendent of the physical survey of the State. Much of his time, as we have seen, was devoted to this survey, collecting information about crops, forests, minerals, fruits, and cattle in the various counties. Besides, he traveled in other States a great deal, making addresses here and there. For example, in 1871 he lectured in St. Louis, Nashville, and Memphis, as well as in Norfolk and Richmond. As he had opportunity he also continued work on his geography textbooks for use in schools. In 1870 his excellent *Manual of Geography* was published, and three years later appeared his *Physical Geography*. The latter was an easier and better book for schools than the one on the same subject that he had published in England in 1864.

By 1871 his books were being used in more than five thousand schools in the United States, with an average of about forty copies in each; and during the year his income from them was more than $30,000.

On January 1, 1872, he sold the copyrights of his books to the University Publishing Company, the successor of Richardson and Company. By the contract he was to revise the books from time to time, being paid for revising; and he was to receive a royalty of ten per cent on the sales of his books and maps during his lifetime. At this time (1872) the University Publishing Company had five books and eight wall maps of his on sale.

By May, 1871, Maury had the manuscript ready for his second report on the physical survey of Virginia. It made an octavo volume of 142 pages, but it was not pub-

lished until 1878. Then it was brought out by the State under the editorship of the author's son, Colonel Richard L. Maury. It is very probable that the lack of means for printing and freely circulating his reports had something to do in 1871 in disposing Maury to go to Alabama.

But the great Pathfinder's years were lengthening. His strength and health were declining. Not long did he receive the ten per cent; not long did he face the tasks of revision; not long was he to be vexed by plans delayed. His pen and his tasks soon fell to other hands. But his field of service continued large and his interest keen until almost the end. In May, 1872, he delivered an address at St. Louis, still pleading earnestly for a system of weather reports for farmers. In August he made a similar plea at Griffin, Georgia. In September he addressed a farmers' club near Boston, Massachusetts, and thence went back to St. Louis where he spoke at the annual fair of the St. Louis Agricultural and Mechanical Association. He was hoping to see assembled a great international congress for farmers, similar to the one that had met at Brussels, in 1853, for merchants and navigators. The next year (1873), shortly after his death, such a congress was held at the city of Vienna, Austria.

After two weeks in St. Louis in the autumn of 1872, Maury came home to Lexington, arriving there on October 23d, the very day on which he was expected to speak at the first annual fair of the Seaboard Agricultural Society at Norfolk. He was too ill to attend, although his address had already been prepared.

In this, his last address, prepared but not delivered,

Maury continued to advocate crop reports and weather forecasts for the farmers. He also asserted that domestic trade should be as carefully looked after by Congress as trade with foreign countries. Other subjects that he touched upon were the regulation of the railroads by the government and the development of our inland waterways.

CHAPTER XXIII

THROUGH GOSHEN PASS

THE length of a life is measured in years, its fulness in deeds. By October, 1872, Maury's life was rich and full, though he had not reached the expected three-score years and ten. Ill and suffering, he returned to Lexington and said to his wife, "My dear, I am come home to die." So it was, though he lingered nearly four months before the end. But even in bed, he did not stop work altogether. When not too much in pain he went ahead with the revision of his *Physical Geography*.

In the midst of keen suffering he was patient and courageous. The Christian faith that had given character to his fathers for generations was strong in him. He interpreted his illness as the command of God to launch on the viewless and eternal sea. Towards the end he sent farewell messages to friends, among them Commodore Jansen, of Holland, and Rev. F. W. Tremlett, of England. In England Dr. Tremlett had been his pastor and one of his most loyal friends. A few days before he died he told the doctors not to come to see him any more. "Leave me to the Great Physician," he said.

In his death, as in his life, Maury found great joy in having his family about him, and was most happy because he was able to recognize them all and call each one

by name as they stood around his bed. He repeated for them and had them write down a prayer which he had composed and which he had used every day for more than thirty years. This he continued to repeat in his final illness:

"Lord Jesus, Thou Son of God and Redeemer of the world, have mercy upon me! Pardon my offenses, and teach me the error of my ways; give me a new heart and a right mind. Teach me and all mine to do Thy will, and in all things to keep Thy law. Teach me also to ask those things necessary for eternal life. Lord, pardon me for all my sins, for Thine is the kingdom and the power and the glory, for ever and ever, Amen."

A few hours before his death the family sang for him verses from his favorite hymns, "Christ is Risen" and "How Firm a Foundation." He gave them his blessing and awaited the end with calmness and trust. At his request his wife and daughters retired from the room, and he was left with his two sons, Richard and Matthew, and his two sons-in-law, Maury and Corbin. In the parlance of the sea he said to his son, Colonel Maury, "Do I seem to drag my anchors?"

"They are sure and steadfast," was the answer.

His final words were, "All is well!"

Tolling bells announced the sad news to the town. Telegraphs flashed it over the world. The Virginia flag was flown at halfmast at the Institute. Quiet rested again upon the battlemented hill as it had done two years before at the death of Lee.

Maury died at half-past twelve on Saturday, February

1, 1873. During Monday and Tuesday the body lay in state in the Institute library, the breast covered with the decorations of kings and learned bodies, beneath the flags of Virginia and Tennessee.

In the press notices that soon appeared in many parts of our own country and in Europe, high tributes were paid to Maury. The following lines are taken from a long article in the New York *Herald:*

"The death of this distinguished physical geographer will create a profound sensation both at home and abroad. As the founder and most successful prosecutor of the benign system of oceanic researches, which has illumined the perilous paths of the mariner and taught commerce how to make the wind and currents of the sea do its bidding, his labors will long be gratefully remembered. As a marked type of an American scientist his career deserves careful study."

Among various bodies that passed resolutions of respect at Maury's death was the North River Farmers' Club. This was an organization of farmers and mechanics who lived in and near Lexington.

At noon on Wednesday, February 5, funeral services for Maury were held in the Institute library, Rev. William N. Pendleton reading the burial service. The hymns, "How Firm a Foundation" and "Nearer My God to Thee," were sung. At one o'clock the cortege moved to the cemetery, which is about half a mile away on the southwest side of the town. The hearse was drawn by four gray horses, a Negro groom in black suit at each bridle. Officers and cadets of the Institute, with the fac-

ulty and students of Washington and Lee, were in the procession.

The casket was placed temporarily in the Gilham vault in the cemetery at Lexington, just opposite the grave of Stonewall Jackson. In the autumn it was carried to Richmond, to its final resting place in Hollywood Cemetery.

Shortly before his death Maury's wife requested permission to bury him in Richmond, where she herself wished to lie. He replied gently, "Very well, my dear; then let my body remain here until the spring, and when you take me through the Goshen Pass you must pluck the rhododendrons and the mountain ivy and lay them upon me."

At that time the nearest railway station was at Goshen, now on the main line of the Chesapeake & Ohio, twenty miles north of Lexington, behind the first ranges of the Alleghanies. North River, which flows past Lexington, comes down from the mountains back of Goshen, and cuts a giant gorge five miles through the rocky cliffs on its way out into the valley. The road from Lexington to Goshen, for more than half of the twenty miles, winds alongside the splashing stream. Through the gorge, Goshen Pass, the scenery is rugged and wonderful. In traveling that way Maury always rode on the outside of the stagecoach in order that he might have an unobstructed view of the beauty and grandeur of the canyon. He also loved the springtime flowers that perfumed and adorned the winding road.

But it was September and not May when he made his last slow journey through the pass. But gold was tinting

the green, as the season of ripened fruits followed close upon the flowers.

Today the stream through the picturesque and historic gorge is called Maury River, and the winding road from Lexington to Goshen is Maury Highway. Halfway through the pass, under the shadow of a cliff and bordered by spruce and rhododendron, stands a granite shaft to Maury, erected in 1923 by the State of Virginia. A bas-relief of Maury is at the top of the bronze tablet on the shaft, and below it is this inscription:

MATTHEW FONTAINE MAURY
PATHFINDER OF THE SEAS
THE GENIUS WHO FIRST SNATCHED
FROM THE OCEAN AND ATMOSPHERE
THE SECRET OF THEIR LAWS.

Born January 14th, 1806
Died at Lexington, Va., February 1st, 1873
Carried through Goshen Pass to his Final
Resting Place in Richmond, Virginia.

EVERY MARINER
FOR COUNTLESS AGES
AS HE TAKES HIS CHART TO SHAPE
HIS COURSE ACROSS THE SEAS,
WILL THINK OF THEE.

HIS INSPIRATION HOLY WRIT
Psalms 8 and 107, Verses 8, 23 and 24
Ecclesiastes Chap. 1, Verse 8

A TRIBUTE BY HIS NATIVE STATE
VIRGINIA.
1923

At the base of the granite shaft is a huge iron anchor; and around the small enclosure is the long anchor chain. On the anchor is a small bronze plate with this inscription:

"THE
PATHFINDER
OF THE SEAS"
IN APPRECIATION OF HIS SERVICES
TO THE MARINERS OF THE WORLD
VIRGINIA PILOT ASSOCIATION

In the cemetery at Lexington, near the tomb of Jackson and the Gilham vault in which Maury's body rested for a while, is the grave of Margaret Junkin Preston, a gifted writer of verse. Her home was in Lexington, and when Maury's body was carried to Goshen that day of late September, she wrote the following beautiful lines:

THROUGH THE PASS

"Home, bear me home, at last," he said,
"And lay me where your dead are lying;
But not while skies are overspread,
And mournful wintry winds are sighing!

"Wait till the royal march of Spring
Carpets the mountain fastness over—
Till chattering birds are on the wing,
And buzzing bees are in the clover.

"Wait till the laurel bursts its buds,
And creeping ivy flings its graces
About the lichened rocks—and floods
Of sunshine fill the shady places.

"Then, when the sky, the air, the grass,
  Sweet Nature all, is glad and tender—
Then bear me through the Goshen Pass,
  Amid the hush of May-day splendour."

So will we bear him—human heart
  To Nature's own drew never nearer;
And never stooped she to impart
  Her love to one who held it dearer.

The stars had secrets for him; seas
  Revealed the depths their waves were screening;
The winds gave up their mysteries;
  The tidal flows confessed their meaning.

Of ocean paths the tangled clue
  He taught the nations to unravel,
And showed the track where safely through
  The lightning-footed thought might travel.

And yet unspoiled by all the store
  Of Nature's grander revelations,
Who bowed more lovingly before
  The lowliest of her fair creations?

No sage of all the ages past,
  Ambered in Plutarch's limpid story,
Upon his living age has cast
  A radiance touched with truer glory.

His noble living, for the ends
  God set him—duty underlying
Each thought, word, action—naught transcends
  In lustre, save his nobler dying.

Do homage sky, and air, and grass—
  All things he cherished sweet and tender—
As through our gorgeous mountain-pass
  We bear him in his sunset splendour.

CHAPTER XXIV

TITLES AND HONORS

IT is said that Maury received twelve gold medals, sixteen honorary degrees, and twenty diplomas—most of them from Europe. Professor Charles Lee Lewis, in his life of Maury, states that up to the outbreak of the Civil War he had been made a member of some forty-five learned societies, about twenty of which were in foreign countries.

It is doubtful whether a complete list of these various testimonials of service and esteem can now be given. If a complete record of them was ever kept by anybody, it is probably not now in existence. Mrs. Corbin, in her life of her father, published in London in 1888, mentions a number of medals and names eighteen learned societies and institutions in which he was elected to membership, and then says:

"He was also a member of many other learned bodies, of which the records have been lost during the war."

One of the first educational institutions to recognize Maury's unusual merits and to confer a degree upon him was the University of North Carolina, which made him a Master of Arts in 1847. The same institution gave him the degree of Doctor of Laws in 1852. Two years later he was honored with the same degree by Columbia College, of New York City, now Columbia University.

In 1868, while in England with most of his family, Maury was invited to Cambridge University and there was given the degree of LL.D. He was accompanied to the classic shades of the ancient school by his wife, his daughters, Molly and Lucy ("Tots" and "Sat Sing"), and the Rev. F. W. Tremlett, a dear personal friend. They were all guests of the Vice-Chancellor. In the chapel there was a long oration in Latin by the dean of the University, addressed to the audience in general and to the candidates for degrees in particular.

Translated into English, a part of the speech introducing Maury was as follows:

"I present to you Matthew Fontaine Maury, who while serving in the American Navy did not permit the clear edge of his mind to be dulled, or his ardour for study to be dissipated by the variety of his professional labours, or by his continual change of place, but who, by the attentive observations of the course of the winds, the climate, the currents of the seas and oceans, acquired those materials for knowledge, which afterwards in leisure, while he presided over the Observatory at Washington, he systematized in charts and in a book—charts which are now in the hands of all seamen, and a book which has carried the fame of its author into the most distant countries of the earth.

"Nor is he merely a high authority in nautical science. He is also a pattern of noble manners and good morals, because in the guidance of his own life he has always shown himself a brave and good man."

Two other distinguished men received the LL.D. de-

gree at Cambridge that day along with Maury. They were William Wright and Frederick Max Müller. The trio sat on front seats, each clad in the ample university gown of bright red cloth, lined with pink satin. On his head was the usual mortar-board cap.

When the oration was finished the students gave three cheers and proceeded to crack some good-humored jokes at the expense of the honored guests, each of whom was led up to the Vice-Chancellor, welcomed by him, and then seated on the dais near him.

In 1853 Maury was elected a corresponding member of a scientific society at Batavia, Java, in the Dutch East Indies. This was the year of the Brussels Conference, and the renown he won in connection with that great assembly no doubt induced various societies to honor him with membership. At any rate, within the next three years he was elected to no less than six learned bodies in Germany, Belgium, Russia, and the United States. One of these was the Imperial Academy of Sciences of Russia, and another was the Royal Academy of Sciences, Letters, and Fine Arts of Belgium. In 1858 he was similarly honored by societies in Germany and Bohemia.

Baron Humboldt wrote him a highly complimentary letter in 1855, giving him credit for promoting commerce among nations, shortening routes for sailing ships from port to port, and making navigation safer on all seas. The same year he received two medals from the king of Prussia. The next year the king of Denmark made him a knight of the Dannebrog, and in 1858 he was nominated to the French Legion of Honor by the emperor of France.

The czar of Russia made him a knight of the Order of St. Ann; the king of Portugal a knight of the Tower and Sword; the king of Belgium a knight of the Order of St. Leopold.

Austria, Sweden, Holland, Sardinia, France, and the German State of Bremen struck gold medals in his honor. The two from Prussia have already been mentioned. In 1855 he was awarded a medal of honor for his charts at the Paris Universal Exhibition. In 1860 the Pope sent him a set of thirteen elegant silver medals—all that had been struck during his pontificate. These were given Maury in appreciation of his eminent services in the cause of science. A few years later Maximilian, the unfortunate emperor of Mexico, bestowed upon him the decoration of Our Lady of Guadeloupe. This was done in recognition especially of Maury's important services towards the laying of the Atlantic cable.

As an officer in three navies Maury held various titles to correspond with his official rank at different times. In 1836 he was made lieutenant in the navy of the United States. In 1858 he was promoted commander in the same service, effective from 1855; but it was as "Lieutenant Maury" that he was generally known in England and other European countries. In fact, it is said that he was usually referred to as "the great Lieutenant Maury."

In the navy of Virginia Maury held the rank of commodore, and in that of the Confederate States of America he was a commander, some say captain; but it seems to be the general custom now in the Southern States, including Virginia, to speak of him as "Commodore Maury."

Photo by Dementi

MAURY MONUMENT IN RICHMOND

Unveiled Armistice Day, 1929

CHAPTER XXV

BOOKS FOR BOYS AND GIRLS

MAURY was honored by men of highest authority, and was the trusted friend of statesmen, generals, scholars, and kings; yet some of his most cherished and far-reaching work was done for the eager, unlettered children of the common people. Into many a humble home on prairie and mountainside he brought the wonders of distant lands, and in many a throbbing heart of youth he planted an ambition to see the great world and to take a place of worth and service in it. For many years Maury's geographies, like McGuffey's readers, gave thousands of boys and girls in school and home knowledge, pleasure, and uplift, while making them lovers of beauty, courage, and truth.

It was fitting that one who loved children should do so much for them.

In this chapter are assembled various passages from Maury's geographies, mostly from those written for children, to show his manner of writing and to pass on to others some of the interesting facts he presented.

The second lesson in Maury's *Elementary Geography,* designed for primary and intermediate classes, is on "Direction." The first part of the lesson deals in an easy and interesting way with the cardinal points, east, west, north,

and south, and with the halfway points, northeast, northwest, etc.; then the story continues as follows:

From what we have now learned we see that when the sun shines it is easy to tell in what direction we are going. But there is something which shows direction even better than the sun.

Sometimes people are days and days at sea without seeing the land, and with nothing but the sky above them and water all around. Often the sky is covered with clouds, and the sun cannot be seen. How do they know which way to go? They use what is called the *Compass*. In it there is a little needle made of steel that always points toward the north.

With a compass, therefore, we can always tell which way is north. And if we know where north is, we can also tell the south, the east and the west.

The Indians and hunters who catch animals for their fur live a great deal in the forests. Often there are no roads to guide them. Sometimes it is very cloudy, and they cannot see the sun. They are said to have a very curious way of finding out then where the north is.

Moss grows best in shady places, and generally grows thickest on the north side of the trunks of trees, because the sun does not shine much on that side.

The hunters and Indians, therefore, look to see which side of the tree is covered with moss. They know that the mossy side is the north side. Moss is to them as good a friend as the compass is to the sailor.

At night it is easy to find one's way if the stars can be seen. There is one star which is always in the north. We can see it in the picture.

The single star is called the North Star because it is always in the north. We find it by the help of two bright stars in the Great Dipper. They are called the Pointers.

Following is part of an easy lesson on the sea:

We can see in the picture on page 8 that the water is very much larger than the land. The water is nearly three times as large as the land.

Under the water is land which is much like other land except that the water covers it. Strange plants grow on it. There are no daisies or buttercups, but there are beautiful seaweeds, colored purple and yellow and red and green. The fishes, you see, have their gardens as well as we.

It seems to us perhaps very strange that the fishes should have so much more room to live in than man and the other animals.

But we shall see, when we know more about geography, that the men and animals that are on the land, could never live, if it were not for the great sea. The plants would have no rain. They would all die, and there would be nothing for us and the animals to eat.

Here is a glimpse of the Netherlands:

We come now to one of the strangest of all countries, the Netherlands.

The name means Low Countries, and low they are. In some places the land is twenty or thirty feet below the surface of the sea. Great embankments of earth, called *dykes,* have been built to keep out the water. They are like our Mississippi levees.

We see the great white sails of windmills all over the country. What does it mean? Some of these mills are grinding wheat, but most of them are pumping the Netherlands dry.

In this watery land there are a great many canals. They cross the country in every direction and serve instead of roads.

In winter they are frozen over, and all the people go on skates and sleds. The women often skate several miles to market, with baskets of eggs on their heads.

The Dutch (as the people of the Netherlands are called) are great cattle-raisers, sailors, and fishermen. They are a most enterprising people, and have a large foreign commerce.

All of the foregoing quotations are from Maury's *Elementary Geography,* first published in 1870, and they illustrate fairly some of his ideas about teaching children. He refused to follow the fashion that was usual in the dry textbooks of his day. His plan was to present, in simple words and in the form of a story, interesting facts about the different peoples of the earth, their homes, their work, and the lands in which they live; and at the same time to call attention to those natural laws of the earth, sea, and sky which largely determine the conditions under which people live and work.

Along with his interesting word pictures, Maury put into his books numerous printed pictures and maps that were before the eyes of the children as they read his stories and descriptions. He himself had seen many places, many different peoples, and a great variety of industries in different lands, and he had the skill to enable his young readers to see what he had witnessed. Reading one of Maury's books was almost like taking a trip around the world with him.

His *Manual of Geography,* also published first in 1870, was intended for more advanced students; consequently it did not contain as many interesting little stories as the smaller book named above; but it, too, was written in an easy and readable style and was, if possible, richer in maps and pictures than the other one. An idea of the "Manual" may be obtained from several specimen passages. Here is one, dealing with some contrasts between Europe and America:

Unlike America, Europe is an old country; its nationalities

count their ages by centuries. Its resources are well developed and it overflows with population. It contains about six times as many inhabitants as the United States, and more than ten times as many as the whole of South America.

In Europe, land is dear and labor abundant. In America, land is comparatively cheap and labor comparatively scarce. Hence it is easier for a working man to make a living in America than in Europe. It is owing to this that there is such a large migration from the Old World to the New.

To an American who visits Europe for the first time, the most striking features are the high state of improvement of the country, the excellence of the roads, the vast extent of cultivated lands in proportion to woodlands, and the number of cities and villages. He is surprised, also, on the continent, at the number of female laborers that he sees in the fields.

Of people and doings in the great Sahara Desert of Africa we are given the following interesting glimpses:

The people of the desert are largely occupied in transporting, by means of their camels, the exports of the Sudan to the Mediterranean cities, and bringing in return cutlery, cotton goods, and trinkets.

The salt of the Sahara mines and brine pits constitutes the wealth and only important export of this region. In some places it is quarried in blocks. At Bilmah, which supplies the greater part of Central Africa with salt, are pits on which, every two or three days, a crust of salt is formed several inches thick. Caravans of 1,000 camels go to Bilmah for it.

Numerous caravans cross the desert from the Barbary States and Egypt. The main routes are from Tripoli to Kano, in the Sudan, from Morocco to Timbuktu, and from Egypt to El Fasher.

Thousands of camels, freighted with merchandise, pass over

these ways of the wilderness. They occupy from thirty to ninety days in their journey.

The camel has justly been called "the ship of the desert." He is wonderfully fitted to live in this waterless region, and act as carrier across the pathless sands. He is provided with a pouch that will hold a supply of water sufficient for several days, while his feet are furnished with a cushioned sole, which protects them from the burning heat of the sand, and makes his footing firm.

As noted elsewhere, Maury published in England a book on physical geography in 1864. Two years later, after his return to England from Mexico, he began another book on the same subject, which was published in the United States in 1873, the year of his death. The last work he ever did was probably on the proof sheets of this volume.

The following paragraphs are quoted from Maury's preface to the first edition of his *Physical Geography,* as published in America in 1873:

This volume, together with the three graded Geographies previously published, and a treatise on Astronomy, forming the Author's contribution to the University Series of School Books, was commenced in 1866. It is the joint labor of his wife, daughters, and self, and constituted one of the chief sources of their home recreation during their residence in England. There the best sources of information were kindly and freely opened to him. This, combined with the knowledge and experience acquired or perfected in the superintendency, for fifteen years, of the Washington Observatory, made the undertaking congenial and the occupation as charming as labors of love always are.

The aim throughout the series has been to strip these two most important branches—Geography and Astronomy—of dry details

and mere technicalities, to popularize these fields of knowledge, and make them as interesting and instructive to students as possible.

He also asserts that one of his chief aims was to prepare readers and students to understand and take an intelligent interest in physical geography. He terms it a "noble science," and shows that he desired especially to awaken in the minds of the young that spirit of observation and patient inquiry "which has already won from nature so many of her most hidden secrets."

The keynotes to this attractive volume are deftly presented in the following paragraphs:

Physical Geography invites you to consider the terrestrial machinery which makes day and night, seed-time and harvest; which lifts the vapor from the sea, forms clouds, and waters the earth; which clothes it with verdure and cheers it with warmth, or covers it with snow.

Physical Geography treats of the agents that cause the wonderful circulation of the waters of the sea, that diversify the surface of the earth with hills and valleys, and embellish the landscape with rivers and lakes.

Physical Geography views the surface of the earth, its waters, and its enveloping atmosphere as the scene of the operations of great physical forces, which by their united action render possible the life of plants and animals. It studies the life of the globe whether on its surface or within its waters, taking note particularly of the circumstances which are favorable or adverse to the development of organic forms. It is especially interested in the earth as the abode of man.

Observing in careful detail the various features and agencies of our planet, it considers them as parts of a magnificent ma-

chine, by whose operations, under the guidance of the Great Designer, this planet is made a dwelling-place fit for man.

To conclude this brief series of quotations from Maury's textbooks for schools, a passage is selected from the *Physical Geography* that relates to the bottom of the ocean and the "Telegraphic Plateau":

The bottom of the ocean is, like the land, diversified with hill and dale. Vast plateaus, banks, and shoals spread themselves out; and islands rise from the ocean depths far more abruptly than mountains do from the lowlands.

San Domingo and many other islands of the sea rise from the bottom to the surface almost perpendicularly. The Silla de Caracas, on the other hand, which is the steepest mountain in the world, rises at an angle of 53 degrees.

The bed of the Atlantic has been more thoroughly examined than any other. It seems to consist of two nearly parallel valleys extending north and south and separated by a lofty dividing ridge. The islands which are scattered along its length are the summits of this ridge. That portion of the Atlantic bed to which the name of *Telegraphic Plateau* has long been given is of special interest. This plateau stretches entirely across from Newfoundland to Ireland, at an average depth of somewhat less than two miles.

If we imagine ourselves walking across it from Newfoundland to Ireland, we shall first descend by an easy slope to the Grand Banks. Here the depth is about 1,000 feet. Leaving the Grand Banks we shall pass quite rapidly to the depth of about 13,800 feet. From this point there is not much variation in the depth for about half-way across the ocean. When, however, we have performed half of our journey, we shall ascend again, first rapidly and then gently, until we reach the neighborhood of the British Isles. For a distance of about 230 miles westward

of Ireland the upward slope is very gradual until we gain the dry land.

Diagrams are printed alongside this description to make it plain.

Today Maury's books are not used in the schools as widely as they were years ago, but in many a school the name of a building or the annual celebration of a memorial day is proof of the honor which is accorded him. For example, in 1910 the city of Norfolk, Virginia, named its splendid new high-school building for Maury. Five years later a section of the Academic Building at the United States Naval Academy, at Annapolis, Maryland, was christened Maury Hall. In 1916 the legislature of Virginia designated January 14 as Maury Day, to be celebrated annually in the public schools. The next year one of the science buildings of the State Teachers College at Harrisonburg was named Maury Hall. At Virginia Military Institute Maury-Brooke Hall was built in 1908-09, and received its name at that time.

Near the beginning of this chapter reference is made to McGuffey's readers. It is a remarkable coincidence that Maury and McGuffey, authors of two of the most popular series of school textbooks ever written in this country or in any other country, lived during the last five years of their lives in the same State, and not far distant from each other. Maury at Lexington, in Rockbridge County, Virginia, and McGuffey at Charlottesville, in Albemarle County, were only sixty miles apart.

The coincidence is more remarkable in the fact that

they both died the same year, 1873—Maury on February 1, and McGuffey on May 4. While Maury's body was kept at Lexington prior to the final journey through Goshen Pass, McGuffey was carried to his quiet resting place under the giant oaks at the west side of the University campus, at Charlottesville, where his virtues and talents had crowned many fruitful years.

Both of these men were outstanding in their service to mankind, in their special gifts to children, and in their steadfast religious faith; and of both it can truly be said, in the words of a great Book that they both loved,

> "they may rest from their labours;
> and their works do follow them."

CHRONOLOGY

Notable Incidents in the Life of Matthew Fontaine Maury:

1806—January 14. Born in Spotsylvania County, Virginia.

1810—The Maurys move to Tennessee; Matthew carried at times on the back of his sister, Matilda.

1818—Falls from a tree—severely injured.

1825—Spring. Leaves home for Washington, riding gray mare, Fanny.
At Fincastle, Va., riding up from Tennessee.
May. At Cousin Reuben's in Albemarle, eats first ice cream.
June 16. The *Brandywine* launched for Lafayette.
August 13. Maury reports on the *Brandywine* at New York.
September 8. The *Brandywine* sets sail for France from the mouth of the Potomac.
November 2. The *Brandywine* joins Commodore Rodgers's squadron at Gibraltar.

1826—May. The *Brandywine* arrives at New York.
Spring. Visits home in Tennessee.
June 10. Sails from Norfolk on the frigate *Macedonian* for Rio de Janeiro.

1827—March 10. Joins the *Vincennes* in Callao Roads, Peru.

1829—July 4. The *Vincennes* leaves Callao to cross the Pacific.
July 26. The *Vincennes* reaches Nukahiva, Marquesas Islands.

1830—January 3. The *Vincennes* anchors in Macao Roads, China.
June 8. The *Vincennes* arrives at New York.

1831—June. Maury sails in the *Falmouth*.
October. The *Falmouth* reaches Valparaiso.
Maury sailing master of the sloop of war *Falmouth;* sails her round the Horn.

1832—A hero at San Lorenzo.

1833—August 20. Transferred from the *Falmouth* to the *Dolphin.*
Autumn. Transferred from the *Dolphin* to the *Potomac* at Callao.
December 15. At Valparaiso again, and Manuela.

1834—Early summer. Reaches Boston in the *Potomac.*
July 15. Marries Ann Herndon, near Fredericksburg.

1835—Making a home in Fredericksburg.
June 24. Elizabeth Herndon Maury born in Fredericksburg.

1836—June 10. Made lieutenant in the United States Navy.
Treatise on Navigation, published in Philadelphia.
His book reviewed by Edgar Allan Poe.

1837—March 18. Attached to the *Macedonian* again.
June 25. Annie Fontaine Maury ("Nannie Curly") born in Fredericksburg.
September. Appointed astronomer of South Sea expedition.

1838—Spring. Resigns from South Sea expedition.
March 29. Catherine Ann Maury, sister of M. F. Maury, dies.
Summer. Publishes five articles in the Richmond *Whig;* pen name, "Harry Bluff."
December. Publishes seven more articles in the *Whig;* "Will Watch to Harry Bluff."
Advocates a naval academy.
Richard L. Maury, brother of M. F. Maury, dies.

1839—January. Publishes in *Southern Literary Messenger* "Direct Trade with the South."
Engaged in surveying southern United States harbors.
Visits home in Tennessee.
In stagecoach accident—severely injured.

1840—Reaches New York too late for ship.
April. "Scraps from the Lucky Bag," No. I.
May. "Scraps from the Lucky Bag," No. II.
August 31. Writes Rutson Maury on the secret of happiness—"occupation for some useful end."
October 9. Richard Lancelot Maury born in Fredericksburg.
December. "Scraps from the Lucky Bag," No. III.

1841—January. "Scraps from the Lucky Bag," No. IV.
June. "More Scraps from the Lucky Bag."
July. A sketch of Maury in *Southern Literary Messenger* by a "Brother Officer."

November. Maury makes another request for active service.

1842—July 1. Takes charge of Depot of Charts and Instruments at Washington.
August 31. Congress appropriates $35,000 to equip the Depot.
October 21. John Herndon Maury born in Fredericksburg.

1843—July. Lectures on the Gulf Stream before the President and the Diplomatic Corps.
Presents paper on "Blank Charts" before the National Institute.
Edits the *Southern Literary Messenger.*

1844—Advocates canal to connect Mississippi River with Lake Michigan.
November 13. Mary Herndon Maury born in Washington.

1845—Begins a catalogue of the Stars.
November. Attends Memphis Convention.
Warns against disunion.
"Letters to Clay" in *Southern Literary Messenger.*

1846—Addresses Philodemic Society, Georgetown College.
His first volume of astronomical observations, a pioneer work.
December 5. Eliza Hull Maury born in Washington.

1847—First Wind and Current Charts published.
Made a Master of Arts by the University of North Carolina.

1848—Issues "Abstract Log" for navigators.

1849—January 9. Matthew Fontaine Maury, Jr., born in Washington.
Congress authorizes three ships to co-operate in taking soundings of the North Atlantic.

1850—Advocates treaty with Brazil to open navigation of the Amazon River and to stop the slave trade.

1851—May 9. Lucy Minor Maury born in Washington.
Conceives the idea of systematic observations on land and sea, and urges daily weather reports for farmers.
Clipper ships race from New York to San Francisco.
Writes report on fortifications.
December 24. Writes Mrs. Blackford on slavery.
Second volume of astronomical observations published.
More than one thousand ships on all oceans observing for Maury.

1852—Makes an orthographic map of the North Atlantic Ocean.
Made LL.D. by the University of North Carolina.
Another great race of ships.

1853—January 26. Herndon's report on the Amazon submitted to Congress.
The *San Francisco,* disabled in a storm, located by Maury.
July 23. Sails from New York for Brussels Conference.
August 23. Brussels Conference opens.
Advocates weather reports on land at Brussels.
Merchants of New York give Maury $5,000.
Writes seven "Inca" articles setting forth the resources of the Amazon Valley.
November. Begins to correspond with Cyrus W. Field.
Brooke's sounding device used on the *Dolphin.*
Commander McClure completes Northwest Passage.
E. K. Kane leads expedition to Arctic waters.

1854—February. Gives information to cable projectors.
March 22. Made member of scientific society of Emden, Hanover.
Telegraphic Plateau reported.
Sixth edition of *Sailing Directions.*
Made LL.D by Columbia College, New York.
December 4. Recognized in report of Secretary of the Navy.
December 7. Made member of scientific society of Hainault, Belgium.
December 17. Made member of Royal Academy of Sciences and Arts of Belgium, at Brussels.

1855—January. Bill offered in the Senate to give Maury $25,000.
February 3. Letter from Humboldt, transmitting medal from king of Prussia.
February 28. Efficiency Act passed by Congress.
More letters to Field on the Atlantic cable.
Delivers addresses in South and West on land weather reports.
Addresses literary societies at the University of Virginia.
Publishes chart on "Ocean Lanes."
First edition of his *Physical Geography of the Sea.*
July 25. Writes Frank Minor on industry.
A merchant ship named for Maury.
Awarded a medal at the Paris Exposition.
September 17. Relieved from active service on recommendation of Naval Retiring Board.
September 20. Writes Bishop Otey concerning his demotion.
November. The *Scientific American* protests against the retiring of Maury.

December 2. Constantine, Grand Duke, chief of Russian Navy, writes Maury a letter of appreciation.
December 15. New York *Herald* protests against retiring of Maury.
December 28. Letter from Schliedon, with gold medal from Republic of Bremen.
December 29. Made member of Imperial Academy of Sciences of Russia.

1856—January 10. Addresses United States Agricultural Society on land meteorology.
January 21. Senator Bell, of Tennessee, petitions the Senate on Maury's behalf.
February 13. Made member of scientific society of Marburg, Prussia.
May 17. Made member of Historical Society of New Jersey.
Speaks at Decatur, Ala., on weather reports for farmers.
State of Missouri authorizes establishment of five observatories for agriculture.
Secretary of Navy Dobbin lauds Maury on Telegraphic Plateau.
November. Made a knight by king of Denmark.
November. Delivers two lectures in Buffalo.
December. Delivers six lectures before Lowell Institute, Boston.

1857—January 28. Letter by Maury read before Royal Dublin Society.
Travels south and west at his own expense, making addresses for a weather bureau.
April 11. Humboldt, at age ninety, writes Maury a letter of congratulation.
September 3. Made a member of Historical Society of Tennessee.
Made a knight by the czar of Russia.
His portrait painted in fresco in Tennessee State capitol.
Senator Harlan reports Maury's plan for land meteorology.
Maximilian, of Austria, sends him a diamond breastpin.

1858—January 13. Made a member of the Bohemian Royal Society, at Prague.
Restored to active service and promoted by the President to commander United States Navy.
February 22. Becomes correspondent of Philadelphia Academy of Natural Sciences.
April 18. Made a member of scientific society of Berlin.
September 2. Great banquet by city of New York to Cyrus W. Field; Field said to have paid tribute to Maury.

Delivers twenty-five lectures in twelve cities.
Eight cities, including Buffalo, memorialize Congress for Maury's plan for daily weather reports.
November. Made a member of the French Legion of Honor.

1859—Lectures in Alabama and Tennessee.
October 12. Addresses Tennessee Historical Society.
Honored by the king of Portugal.
Three hundred and sixty-three ship owners give him a testimonial.

1860—January 3. Writes the governor of Pennsylvania urging him to mediate between North and South.
February 24. Given valuable collection of French charts and nautical instructions and "a great gold medal."
June 6. Archduke of Austria sends Maury a meteorological diary.
September. Visits Niagara Falls and other places thereabouts.
October 10. Makes address at Sewanee, Tenn., at corner-stone laying, University of the South.
October. At Nashville counsels moderation in national crisis.
November. In England, copyrights new edition of his *Physical Geography of the Sea.*
December 7. On steamer returning from England, writes Wm. C. Hasbrouck, his old teacher.
Given medals by the Pope.

1861—April 12. Fort Sumter fired on.
April 15. Lincoln calls for seventy-five thousand troops.
April 17. Virginia passes secession ordinance.
April 20. Maury resigns from United States Navy; leaves National Observatory.
April 23. Commissioned by Governor Letcher in navy of Virginia and appointed a member of Letcher's executive council.
April 26. Writes to Gideon Welles, Secretary of United States Navy, his reasons for resigning.
April 29. Richmond becomes Confederate States capital.
May. Maury assists in fortifying Jamestown Island and Gloucester Point.
June 10. Commissioned in Confederate States Navy.
Summer. Appointed chief of Naval Bureau of Coast, Harbor and River Defense, Confederate States.
Summer. Plans submarine mines to be placed in Southern rivers and harbors.
July. Commands torpedo expedition from Sewall's Point, near Norfolk.

July 27. Constantine, Grand Admiral of Russia, writes Maury, offering him a home, wealth, and honor.
August. Demonstrates submarine torpedo in James River.
October 29. Maury replies to Grand Admiral of Russia.
Autumn. As "Ben Bow," writes articles in Richmond *Enquirer,* advocating big guns on small ships.
Eighth American edition of his *Physical Georgraphy of the Sea.*

1862—March. Takes steps towards a treaty of recognition with France.
April. Louis Napoleon invites Maury to make his home in France.
May. Secures ten miles of insulated wire.
June. Places electric mines in James River.
September. Ordered to England on "special service."
October 7. Gladstone's remarkable speech on the Confederate States.
October 12. Sails from Charleston with Matthew, Junior.
Stops at Bermuda and at Halifax.
November 13. Leaves Halifax on the *Arabia* for Liverpool.
December 22. His letter on the Confederate States printed in the *London Times.*

1863—January. Writes of his apprehensions concerning his children and his friends.
Locates at Bowdon, near Manchester.
March. Purchases the *Georgia,* at Dumbarton, for Confederate States.
April 8. Gets first news of his son John's disappearance at Vicksburg.
November. Purchases the *Rappahannock,* at Sherness, for Confederate States.

1864—January 9. National Academy of Sciences (U. S. A.) resolves against the "Sailing Directions."
Maury's *Physical Geography* published in London.
December 25. Theodore Maury, French scientist, writes him.

1865—April. Maury continues his plans for electrical mines.
May. Reaches St. Thomas in the West Indies.
May. At Havana writes his formal surrender.
June 18. Made a corresponding member of the New York Lyceum of Natural History.
June. Goes to Mexico City—offers his services to Maximilian.
Summer. Various Confederate States leaders go to Mexico.
July. Commodore Jansen writes to Maury.

August 8. Maury, in Mexico City, writes to Rev. Dr. Tremlett, of England.
August. Maximilian appoints Maury Imperial Commissioner of Colonization.
September 5. Maximilian issues decree inviting immigration to Mexico.
September 8. General Lee writes to Maury in Mexico.
September 23. Maury made Director of Astronomical Observatory in Mexico.
Made honorary member of the Mexican Geographical Society.
Made a member of the Imperial Academy of Sciences of Mexico.
October. His son Richard, wife, and young son reach Mexico City.
December 4. United States Secretary of Navy testifies to effectiveness of Maury's torpedoes.

1866—March. Maury leaves Vera Cruz for England.
March 29. Reaches England; meets his family in London.
April 19. Maximilian writes Maury, giving up colonization plan.
April 25. Maury issues circular offering to give instruction in electric mines to official representatives.
May. At Paris, demonstrating electric mines.
May. Invited to become a citizen of France.
June 5. At special dinner in London three thousand guineas presented to Maury.
June 30. Maury writes letter to consul-general for Wurtemberg concerning torpedoes.
July. Instructs representatives of Sweden, Norway, and Holland at London.
July. Engaged by Richardson & Co., New York, to write a series of geographies for schools.
July. Writes to Maximilian from London.
July. The Atlantic cable operating again.
August. At work on his geographies.
August. Maximilian, of Mexico, decorates Maury for his part in the Atlantic cable.
Maury joins Dr. Tremlett's church in London.
Introduces cinchona plantations in Mexico.
November 15. C. W. Field refers to Maury at banquet in honor of Atlantic cable.
Begins "Practical Astronomy for Schools" (never published).

1867—February. Offered a chair at Virginia Military Institute.
Offered vice-chancellorship of the University of the South.

1868—Accepts chair of physics, etc., at Virginia Military Institute.
Made LL.D. by Cambridge University.
Family photograph made in London.
July 1. Sets sail with family from Liverpool for the United States.
July 16. Maury and his family arrive at New York.
Summer. At White Sulphur Springs, guest of the proprietors.
September 10. Installed at Virginia Military Institute.
October 28. Makes important address at Staunton.
Fall and winter. His family in Richmond.
December. His *Physical Survey of Virginia*, 8vo. 90 pages, published in Richmond (first report).

1869—June 10. Maury and his family enter residence at Lexington.
July 2. Maury addresses the graduates of Virginia Military Institute.
December 16. Addresses the Education Association of Virginia.
Valentine, of Richmond, makes a plaster bust of Maury.

1870—Maury offered the presidency of St. John's College, Annapolis.
His *Manual of Geography* first published.
Spends part of the winter in the South.

1871—January 23. Speaks at Virginia Military Institute on "Man's Power-Giving Knowledge."
May. Writes "A Vindication of Virginia and the South."
Offered presidency of the University of Alabama.
Tenders resignation at Virginia Military Institute (Reconsidered).
September 25. Eulogy of Maury, by Admiral Semmes, published in the Montgomery *Advance*.
Makes addresses in St. Louis, Norfolk, Richmond, and Nashville.
October 17. Makes address at Memphis on land meteorology.
Maury's geographies in use in more than five thousand schools.

1872—January 1. Sells copyrights on school books to Richardson & Co.
May 29. Makes address at St. Louis.
August 13. Makes address at Griffin, Ga.
September 18. Makes address near Boston.
October 9. Makes address at St. Louis.
October 23. Reaches home from Missouri (last home-coming).
Winter. Ill, but still working.

1873—February 1. Dies at Lexington.
February 3. General Assembly of Virginia pass resolutions on Maury.

February 5. Body placed in Gilham vault, Lexington, facing grave of Stonewall Jackson.
February. E. P. Dorr and others testify to the worth of Maury's character and the value of his work.
March 20. *Nature,* British journal, declares Maury the first to show how to make meteorology a science.
Virginia Military Institute publishes thirty-two-page memorial of Maury.
September 27. Maury's body taken through Goshen Pass; at Richmond in the evening.
His *Physical Geography* published.

1878—His *Physical Survey of Virginia,* No. II, published in Richmond, with notes and additions by his son, Colonel Richard L. Maury.

1880—His *Manual of Geography* (revised by Mytton Maury) recopyrighted.
December 14. Senator Vest, of Missouri, pays tribute to Maury.

1888—Norway adds $2,180.74 to the Maury Memorial of 1866.
Life of Maury, by Mrs. Corbin, published in London.

1901—Mrs. Maury dies.

1908—Maury sketches published in Quinn's *History of Fredericksburg,* pages 315-320.

1909—Maury-Brooke Hall, at Virginia Military Institute, built and named.

1910—Norfolk's new high school building named for Maury.

1915—Building at United States Naval Academy named Maury Hall.

1916—June 27. January 14 made Maury Day in Virginia schools.

1917—Building at Virginia State Teachers College, Harrisonburg, named Maury Hall.
Articles by J. M. Morgan on Maury in England, 1862-63, published in the *Atlantic Monthly.*

1918—United States Navy destroyer named *Maury.*

1919—United Daughters of the Confederacy establish Maury Prize at United States Naval Academy.

1921—Elizabeth Buford Phillips publishes address on Maury in New York City.

1922—June 22. Corner-stone of Maury monument laid in Richmond. Maury sketches published in Goolrick's *History of Fredericksburg,* pages 93-97.

1923—June 9. Virginia unveils Maury monument in Goshen Pass.
November 20. Maury portrait presented to United States Naval Academy.

1924—C. Alphonso Smith publishes address on Maury at Charlottesville, Va.

1925—December 22. One of the Martin Vas Isles named for Maury.

1927—*Life of Maury,* by Charles Lee Lewis, published at Annapolis.

1928—*Life and Letters of Maury,* by Jaquelin Ambler Caskie, published in Richmond.
November 24. Mrs. James R. Werth (Mary Herndon Maury) dies in Richmond.

1929—November 11. Maury Monument in Richmond dedicated.

1930—February 19. Photographs made at the old Maury home in Tennessee for this book.

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Maury's Lanes Across the Oceans

THERE came from Maury's office in 1853 charts of the Atlantic on which two Lanes, each 25 miles wide, were mapped for the use of steamers between America and Europe. Forty-six thousand Abstracts from as many skippers' Logs went into the charting of these Lanes across the oceans. When only 25 years of age he theorized that the sea had its laws. The waves, winds, storms, currents, depths and temperatures of the sea constituted a cause and effect,—constant in its regularity, perfect in its orderliness and mathematically inter-related that by patient investigation he would be able to understand its phenomena, to forecast its processes and to reduce them in writing so that they could be readily interpreted.

Maury's proud moment came, when, at the Bruxelles international marine conference in 1853, it was unanimously agreed to adopt his Lanes for the Atlantic and his charts in general by which nearly all of the world's shipping was thereafter to be guided. His "Lanes for Steamers Crossing the Atlantic" was published in 1854.—From *The Running Tide.*

Iceland
To North Cape
From North Cape
Norway
Sweden
Finland
Helsingfors
Leningrad
Bergen
Oslo
Gottenborg
Gt. BRITAIN & IRELAND
North Sea
Denmark
Russia
Poland
Leith
Glasgow
Belfast
Liverpool
London
Southampton
Plymouth
Cobh (Queenstown)
Hamburg
Germany
Austria Hungary
EUROPE
HAVRE
PARIS
Cherbourg
France
Nice
GENOA
Italy
Bulgaria
Black Sea
Constantinople
Spain
Naples
Lisbon
MEDITERRANEAN
Turkey
ATHENS
Gibraltar
Algiers
Tunis
Beyrout
Haifa
Jaffa
Suez Canal
TANGIER
ALGERIA
MOROCCO
Libya
Alexandria
Palestine
Egypt
TO INDIA
Mauretania
Sudan
AFRICA